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VOL. VI.—No. 5.] [WHOLE No. 35.

Biological & Medical Serials

NEW YORK MEDICAL JOURNAL.

FEBRUARY, 1868.

EDITED BY

WM. A. HAMMOND, M.D., and E. S. DUNSTER, M.D.

NEW YORK:

MOORHEAD, SIMPSON & BOND, 60 DUANE STREET,

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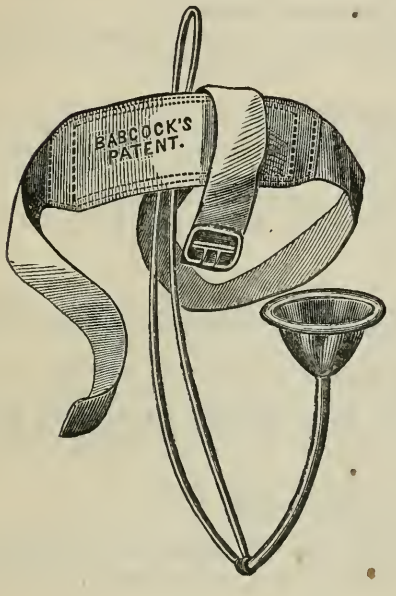

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[Read at the stated meeting of the "Medical Society of the County of New York," Jan. 6, 1868.]

CHOMEL, in his admirable treatise on General Pathology, defines the art or the practice of medicine to be the application of good sense to the treatment of diseases. He adds that knowledge of diseases is indispensable, but good sense ranks first in importance. I give the literal translation of the French term, in preference to

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NEW YORK

MEDICAL JOURNAL:

A MONTHLY RECORD OF

MEDICINE AND THE COLLATERAL SCIENCES.

VOL. VI.] FEBRUARY, 1868. [No. V.

Original Communications.

ART. I.—*Alimentation in Disease.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine in the Bellevue Hospital Medical College, &c., &c.

[Read at the stated meeting of the "Medical Society of the County of New York," Jan. 6, 1868.]

CHOMEL, in his admirable treatise on General Pathology, defines the art or the practice of medicine to be the application of good sense to the treatment of diseases. He adds that knowledge of diseases is indispensable, but good sense ranks first in importance. I give the literal translation of the French term, in preference to

the phrase "common sense" which is generally used with us, inasmuch as good sense is rather uncommon than common. This definition by Chomel is not less just than striking. The ablest practitioners in the different departments of medicine have always been those who, in addition to an abundance of knowledge, possessed in an uncommon degree good sense. This is as true now as hitherto. How often do practitioners, by no means deficient in medical knowledge, fail in practice because they lack good sense! and, on the other hand, good sense often compensates to a considerable extent for deficiency in medical knowledge. The great improvement which has taken place within the last quarter of a century in the practice of medicine, as regards the employment of remedies, and, still more, the hygienic management of diseases, is due not less to the agency of good sense than to pathological researches. Good sense restrains the formation or adoption of baseless speculations and immature doctrines; it prevents one-sided and extreme views; it opposes alike presumptuous innovations and bigoted conservatism; it keeps within proper bounds reliance upon others and self-reliance, discouraging equally blind partisanship and dogmatic egotism; and, finally, good sense is the true genius of medical experience. With these preliminary remarks I proceed to submit to the good sense of those whom I address some considerations relating to an important subject in practical medicine, namely, *Alimentation in Disease.*

As conducive to a proper appreciation of the importance of alimentation in disease, the natural history of

starvation is to be considered. The immediate effects of starvation are, of course, most rapidly produced and most strikingly manifested when all aliment is withheld. The blood is notably diminished and impoverished; emaciation is rapidly progressive, and death, according to the painful experiments of Chossat on inferior animals, takes place when the body has lost one fifth or one fourth of its weight in health. The more obvious phenomena attendant on these immediate effects are as follows: Febrile movement frequently occurs, although the temperature of the body is greatly reduced before death; muscular debility is speedily a marked symptom, and is soon followed by great prostration; the circulation is more and more enfeebled; there is inability to sleep; the moral sentiments are perverted, and, after a time, there is delirium which is sometimes active and sometimes passive; diarrhœa often occurs, and the breath becomes intolerably fœtid. The average duration of life, the complete deprivation of aliment being understood to include water, varies from five to eight days. The mode of dying is typical of slow asthenia or exhaustion. The phenomena are essentially the same, but the duration of life is considerably longer, if water be not withheld.

The phenomena of starvation are not confined to cases in which there is complete deprivation of aliment. This is a fact highly important in its bearing upon alimentation in disease. Starvation is produced whenever the aliment is insufficient, either as regards quantity or quality, for repairing the losses which the blood sustains in supplying to the solids materials for nutrition. The

phenomena of starvation are essentially the same as when all nourishment is withheld; the only difference being that they are developed more or less slowly, they are consequently less striking, and their connection with deficient alimentation is liable to be overlooked. Another fact relating to starvation also has an important bearing on alimentation in disease—certain portions of the body may suffer from the want of materials in the blood proper for their nutrition, while other portions of the body are sufficiently nourished. To quote the language of the author of an able essay on "Army Alimentation:" "Starvation is a comparative phrase. We can starve muscle by withholding nitrogen. We can starve the fats of the body, and destroy the animal heat, by withholding carbon. So, too, we can starve the brain by withholding phosphorus; and starve the blood by failing to supply it with those salts of lime, potash, soda, iron and magnesia, which are essential to its healthy condition."*

Recognizing the fact that the term starvation comprehends all degrees of innutrition between the extreme degree produced by the deprivation of all aliment, and the opposite extreme caused by a slight diminution of the alimentary supplies requisite for the wants of the body; and, also, that certain parts may be starved while other parts are amply nourished, I proceed to state another fact, the practical bearing of which on alimentation in disease will be at once apparent. Starvation

* Dr. S. B. Hunt, *vide* Sanitary Memoirs of the War of the Rebellion, Vol. i, of the series published by the U. S. Sanitary Commission.

may be produced in persons affected with different diseases, as well as in healthy persons. There is nothing in disease to prevent starvation or its immediate effects. Starvation is sure to occur in cases of disease, in a degree proportionate to the lack of material for nutrition in the blood; in other words, in proportion as the requisite amount of aliment is either not ingested or not assimilated. The immediate effects and the attendant phenomena are the same when starvation occurs in connection with disease, as when it is produced in persons previously in health. Impoverishment of the blood, emaciation, febrile movement followed by a reduction of the animal temperature, feebleness of the circulation, vigilance, perversion of the moral sentiments, delirium, diarrhœa, and fœtor of the breath—may be attributable, in cases of disease, to starvation. In connection with all diseases, more or less of the morbid phenomena present arise from starvation, and these phenomena are prominent and grave in proportion to the degree in which either alimentation or assimilation is defective. Chossat has enunciated truths in language which enforces their importance, when he says, "Starvation is a cause of death, marching silently in front with every disease in which alimentation falls below the natural standard. It reaches its natural termination sometimes sooner and sometimes later than the disease which it covertly accompanies; and it may supersede the disease of which, at first, it was merely an incidental element." Starvation is often the immediate cause of death, when diseases destroy life by slow asthenia or exhaustion. If a fatal termination be not due to a direct interference

with the action of the heart, or with respiration, it is correct to say, that patients die because they are starved to death. Certain it is that diseases which do not compromise directly the function of either the heart or lungs, cannot kill so long as the nutrition of the body is maintained at a point compatible with life. Starvation, associated with disease, may be inevitable; that is, the disease may involve an insuperable obstacle to either the ingestion of aliment, or its assimilation. Then it is that, in the language of Chossat, inanition may reach its termination sooner than the disease. On the other hand—and here is a fact full of practical import—starvation may not be a neccessary effect of the existing disease, but may be due to insufficient alimentation. In such cases, inanition may prove a cause of death when the disease need not have destroyed life; the patient, indeed, may die of starvation notwithstanding the progress of the disease *per se* be favorable. Then, in the language of Chossat, inanition "reaches its natural termination later than the disease which it covertly accompanies, and it may supersede the disease of which, at first, it was merely an incidental element."

On these facts pertaining to starvation, rest the practical considerations relative to alimentation in disease, which I shall now proceed to submit.

A logical inference from these facts is, that to prevent starvation is of fundamental importance in the practice of medicine. The importance of this object in the treatment of individual cases of disease, is to be estimated by the amount of impending danger from starvation as an incidental element. All who hear me

are doubtless familiar with the teachings of Graves, with respect to alimentation in the continued fevers. Graves states that he was first led to appreciate the importance of giving nutritious food in cases of fever, by the remark of a shrewd country practitioner, who said that, in his practice, patients generally recovered if he could prevent them from being starved to death. Graves inaugurated a great reform in the treatment of fevers as regards alimentation; and as proof of the strong conviction in the mind of this distinguished clinical teacher of the improvement in practice which dates from his publications, he is said by his co-worker Stokes to have declared that he could desire no better epitaph than, "He fed fevers!" Few, if any, practitioners at the present day, are disposed to undervalue the importance of alimentation in the essential fevers; but it is not less important to prevent, if possible, death from starvation in all other diseases. If to die by slow asthenia be often virtually to starve to death, then, no matter what the disease may be, it is an object of fundamental importance to promote, as far as practicable, the assimilation of food. Looking at the object of treatment in another point of view, it is customary to say that the powers of life are to be supported in proportion to the danger of death by asthenia, whatever be the nature or seat of the disease. Now, of supporting measures, alimentation holds the front rank, not deprecating the importance of stimulants, especially alcoholics, which it is foreign to my present purpose to discuss.

Admitting the fundamental importance of alimenta-

tion in the treatment of diseases, the inquiry arises, what are its limitations? In answer to this inquiry, it is to be stated, that, if we except the early stage of some acute diseases in which it may be an object to withhold aliment with an indirect reference to depletion, there is never any risk of hyper-nutrition. With the exception just stated, I submit the proposition that it is always desirable, in cases of disease, to supply aliment to the fullest extent of the capacity of the organism for appropriation. In acute diseases the failure of the vital powers is forestalled in proportion as nutritive supplies are assimilated. This is simply saying that the assimilation of nourishment is indispensable for the preservation of the powers of life. And then, in the progress of an acute disease, more or less failure of the vital powers ensues, the more nutrition can be maintained, the more efficient the support. The proposition just submitted embraces not only the acute but the chronic diseases. No matter what may be the seat or the nature of the chronic affection, a diet fully up to the capacity of the organism for nutrition promotes recovery, if recovery be possible, and if recovery be not possible, by increasing the ability of the system to endure the affection, contributes to prolong life. The limitations to alimentation, therefore, relate wholly to the physiological processes which are preliminary to nutrition, namely, digestion and the other processes by which aliment is converted into blood. If more food be ingested than the digestive organs can prepare for assimilation, or if the articles of diet be not suited to the digestive powers, the nutrition will not be in pro-

portion to the alimentation, and disorder of the digestive organs may be produced. This is, of course, if possible, to be avoided; yet, the harm resulting from over-alimentation is generally exaggerated. Undigested aliment often passes through the alimentary canal without causing any appreciable disturbance. The disorder which may be produced is due chiefly to chemical changes in the ingesta, and is manifested by flatulence, pain, and looseness of the bowels. Conservatism is seen here as in other morbid effects. As the result, the offending matter is expelled, and the harm is, in general, not more than that caused by a cathartic or laxative. It is quite superfluous to say that to avoid over-alimentation may be highly desirable, but it is sometimes safer to incur risk in that direction, than to limit alimentation below the ability of the digestive powers and the capacity of the organism for nutrition. What rules are to govern the practitioner in so regulating alimentation in disease as to avoid the evils, on the one hand, of starvation, and, on the other hand, of disorder of the digestive organs? To treat of the numerous topics which this question opens up, is impossible within the limits of a brief discourse. In the few moments remaining of the time to which I have restricted myself, I can only submit, without discussion, some of the considerations suggested by the question. An unwillingness to presume upon the patience of my auditory must be my apology for offering statements open to criticism on the score of their having the character of aphoristic propositions.

As the first in rank of supporting measures in the

management of the essential fevers and all acute diseases which endanger life by asthenia, it is often necessary to regulate alimentation without regard to indications afforded by appetite or taste. In many cases of disease, owing to bluntness or perversion of the mental perception, the wants of the system as regards nutrition are not indicated by a desire for food, or by choice in its selection and preparation. Patients not infrequently die of starvation without having experienced any sense of hunger. Under such circumstances, the rule is to supply, not only as much aliment as the digestive organs can prepare for assimilation, but food containing, in proper amounts, all the alimentary principles required to repair the waste of the different parts of the organism. Limiting alimentation to an article of food inadequate as regards the different alimentary principles which it contains, will not prevent starvation, no matter how abundantly the article is ingested. For example, patients may be starved to death on the juice or a decoction of beef given without stint and digested. The risk of starvation is much greater if the diet be restricted to substances less nutritious, such as gelatine, albumen, starch, or gum. The valuable experiments of Hammond and others have established the fact that the last three of these alimentary principles, namely, albumen, starch, and gum, singly, are wholly inadequate to nutrition; and the inadequateness of gelatine was long ago settled by the famous Gelatine Commission in Paris. Under the circumstances stated, the diet should not only embrace the requisite variety of alimentary principles, but food must be given in a concentrated and liquid

form. Milk, *par excellence*, has these recommendations, and is, therefore, of all articles of diet, in fevers and other acute diseases, to be preferred. The alimentation is rendered more effective by the addition to milk of a farinaceous substance, and by alternation with animal broths, or the essence of meat. Eggs, also, form an excellent article of supporting diet, owing to the fact that they contain the requisite variety of alimentary principles combined by the hand of nature. Whenever alimentation is a measure of support, that is, whenever there is danger, either immediate or remote, from starvation, an important rule is to allow always, after food has been given, a sufficient period to judge whether or not it produces disorder of the digestive organs. The intervals should be from three to four hours. If food be given every hour or half hour, as is often done, the organs of digestion have no period of rest, and it is impossible to form any judgment concerning the digestive powers. Moreover, after intervals sufficient to allow of rest, food is more likely to be digested. A grave objection to giving food after very short intervals, is that it involves interference with sleep and occasions both physical and mental annoyance. By allowing sufficient intervals the quantity of food may be graduated to the digestive powers, and thus disorder from over-alimentation avoided.

An important rule of alimentation in fevers and acute diseases, relates to variation in the articles of diet and in the preparation of food. Any article, prepared in a certain mode, and given, without change, day after day, becomes, after a short time, offensive and disgust-

ing. The patient takes it, not merely with indifference or against inclination, but with strong aversion; and this is an evil, not alone on the score of difficulty and annoyance in giving nourishment, but because, under these circumstances, the digestive organs, as well as the palate, rebel against it. Variations may be made by giving, on successive days, the decoction or juice of different kinds of meat; by adding to milk different farinaceous substances, and by different modes of preparation. This rule, like most other dietetic rules, will not be carried out unless the practitioner be precise and enter into minute details in his directions concerning alimentation. Persons upon whom devolves the nursing of the sick, often attach little importance to the diet; they are apt to imagine that everything depends on remedies. The physician not infrequently meets with opposition to his measures of alimentation, arising from a prejudice against feeding patients. It has been a popular notion that starvation, so far from being the mode in which diseases are apt to kill, is a means of cure. Like other popular notions concerning diseases, this doubtless was derived from the medical profession. It is but a short time since the *cura famis* was relied upon in the treatment of most of the acute and many of the chronic diseases. Notions thus derived are often retained in the popular mind long after they have been abandoned by the profession. The introduction by enema of aliment, when it is not retained by the stomach, is often highly important.

Whenever patients desire certain articles of food, as a rule, these are to be allowed. Such a desire, if dis-

tinct, represents generally a want of nutrition, more reliable than the judgment of the physician as to the articles best suited to the case. Every one has heard of instances in which patients have craved articles of food considered as extremely inappropriate, but the cravings being indulged, perhaps without the sanction of the physician, marked improvement immediately followed. Remarkable instances of this kind are undoubtedly authentic, and they are striking illustrations of the soundness of the rule just stated. This rule is in conflict with a popular notion, for the origin of which the profession is doubtless responsible, namely, that in cases of disease the instinctive desires are morbid, and are to be opposed rather than indulged.

Alimentation, as a measure of support, is more important in cases of disease affecting the young and the aged, than during the intervening periods of life. This is consistent with the fact that starvation kills children and old persons more quickly than those who have attained to full development and who are not in advanced years. Of the 150 persons who, after the wreck of the frigate Medusa, were exposed on a raft for thirteen days, with hardly any food, children, young persons, and the aged, were the first to die from starvation.*

During convalescence from fevers and other acute diseases, the ordinary articles of solid food should be allowed, as soon as they are desired. Convalescence is protracted by the continuance of a liquid diet, and by

* Physiology of Man, by A. Flint, Jr., vol. ii, page 16.

an insufficient alimentation. The kinds of food may, in general, be safely left to the choice of the patient, and the quantity is to be graduated by the activity of the digestive powers and of nutrition. The risk of over-alimentation during this period is often exaggerated; and, with reference to alimentation, as well as to other measures, it is to be considered that after many diseases, for examples, the continued fevers and pneumonia, the liability to relapse is exceedingly small.

In the management of chronic diseases, measures aside from alimentation, whether medicinal or hygienic, are serviceable in proportion as they contribute to digestion and nutrition. Whatever be the nature of the chronic disease, or wherever it be seated, it is always an object of fundamental importance to keep nutrition as near as possible to the standard of health. The rules of alimentation, therefore, in cases of chronic disease relate to the most efficient means of effecting this object.

Medicines not infrequently impair the appetite and interfere with digestion. If not required for a special curative effect, they are then likely to do harm by compromising, more or less, alimentation and nutrition. Hence in fulfilling therapeutical indications, an important rule is to select remedies or pharmaceutical preparations which are not offensive either to the palate or the stomach. In prescribing remedies, allowance is always to be made for the wide difference among different persons as regards the gustatory and gastric sensitiveness to medicines. The over-drugging which formerly prevailed was in no small degree objectionable

on account of its effects on appetite and digestion, aside from other effects. In this aspect the use of drugs with far more discrimination and reserve now than formerly, is a great improvement; so, also, is the use of concentrated remedies, the preparation of medicines in agreeable forms, and the hypodermic administration of certain articles.

Efficient alimentation in cases of chronic disease is often impeded by prevalent popular errors. The notion that starvation is a means of cure, to which allusion has already been made, operates largely against an analeptic diet. Another popular notion is that the restriction of diet to a very few articles, and to the same articles continuously, is desirable; whereas, nothing is more certain than that a varied diet is most conducive to digestion and nutrition. As results of these errors it is not uncommon for persons with some chronic ailment, and even healthy persons, not only to become feeble and anæmic, but to suffer, more or less, from the blood-changes which are embraced under the name scorbutus. Chronic affections are in this way protracted, the ability of the system to bear them is impaired, and serious ailments are thereby superadded. Other absurd popular errors relate to supposed individual peculiarities. Many persons seem to be pleased with the idea that articles of diet which are wholesome for mankind in general, are pernicious to them. Practitioners daily meet with cases illustrating this strange manifestation of egotism. How often do we hear the trite saying that "what is one man's meat is another man's poison," a maxim which has very little foundation in truth. I suppose every

one present has often met with objections to milk and eggs, which, as representing all the constituents of the organism, may be called the typical foods, on the ground that they are apt to promote biliousness! It will be a great gain, as regards alimentation in chronic diseases, when these and other errors of the same sort, are completely eradicated from the popular mind.

It is highly important to consider the influence of the mind on appetite and digestion, and thereby on assimilation and nutrition. Not a small number of the disorders referable to impoverishment of the blood and innutrition are traceable to mental depression, which sustains to various disorders the relation of both cause and effect. Hence, in great part, the advantage, in many cases, of change of scene and new associations, the benefit being derived through the mind. Hence, the greater success of those physicians who take proper cognizance of the mental condition, in these cases, as compared with those whose professional offices are limited chiefly to prescribing drugs. Hence, too, the marvellous effect often of judicious encouragement, on the part of the physician, for mental depression in many cases relates to apprehensions which are either groundless or greatly exaggerated. The influence of the mind upon digestion is strikingly shown when, unhappily, patients have fallen into the habit of concentrating the attention upon the sensations which follow the ingestion of different articles of diet. If food be taken with distrust and anxiety lest it prove hurtful, the chances are it will give more or less trouble; and if

taken with a pre-conviction that it will do harm, this result will be pretty sure to follow.

Having reached the end of the time which I resolved, on commencing to write, that I would not exceed, I must leave untouched many of the topics which suggest themselves in contemplating the subject of this discourse. The few and somewhat desultory considerations which have been submitted, relate entirely to alimentation when disease exists. A kindred subject is alimentation in health, considered with reference to the prevention of disease, to the development and growth of the organism, and to mental and physical vigor. The latter is a subject large in extent and of vast importance. With regard to this subject, as well as to alimentation in disease, notwithstanding the knowledge acquired and the improvements made within late years, there is yet abundant scope for further information and progressive practical progress.

My remarks have had reference, almost exclusively, to one aspect of the subject, namely, the danger from defective alimentation, or starvation. The evil consequences of excessive and improper alimentation, both in health and disease, enter into another aspect of the subject. Considered in the latter aspect, the subject is one of magnitude and importance. Unquestionably, the evil consequences of excessive and improper alimentation are not always sufficiently appreciated by all members of the medical profession; and, with the well-known tendency in the doctrines and practice of medicine to opposite extremes, a full apprehension of the danger of defective alimentation is doubtless liable to

be followed by error in an opposite direction. Under the necessity, however, of limiting the scope of my remarks, of the two aspects of the subject I have confined myself, for the most part, to the one which, at the present time, as regards the occasion for suggestive considerations, seems to me relatively the more important.

ART. II.—*Cases and Observations relating to the Science of Toxicology and Pathological Anatomy.* By JOHN A. LIDELL, M.D., New York.

THE following cases, when considered from a medico-legal point of view, appear to possess sufficient interest, especially for the student of toxicology, to endow them with a permanent value. They are also not devoid of interest for the student of general pathology. The writer has therefore deemed it advisable to copy their histories from his note-book, and present them for publication.

CASE I.—*Acute Poisoning by Alcohol; Death in twelve hours; Autopsy.*—Joseph White, a little boy, æt. 6½ years, in good health, drank several glasses of brandy at the instigation of a man named Keneday, who was on a spree, on the afternoon of April 22d. The precise number of drinks administered to him is not known, but it is certain that the quantity was very large for so young a subject. Soon afterwards he was seen staggering along the streets, still accompanied by the man; and, a little while after this, he was carried home by the neighbors in a state of profound intoxication. His parents, supposing that sleep would do him good, placed him in bed, and left him without further care. Late in the evening, however, their attention was at-

tracted by a peculiarity in his breathing, and on attempting to rouse him they found it impossible. The family physician was then summoned, and visited him about midnight, before which time no physician had seen him. The doctor informs me that the patient was comatose when he saw him; that he lay entirely unconscious of everything going on about him; that his face was pale, his pupils widely dilated and insensible to light, his respiration stertorous, his body cool, his extremities cold, his pulse very frequent and feeble, and that his breath exhibited an alcoholic odor. After this he continued to sink gradually, his pulse became more frequent and feeble, his throat and chest became filled with rattles, his breathing grew shorter and more difficult, his body became cold, and he died at 4 o'clock a. m. The treatment consisted in the application of dry heat to his trunk and extremities, and counter-irritation by means of sinapisms applied to his chest, thighs, legs and feet. No remedies were administered internally, because he was so far gone that he could not swallow when the doctor saw him.

Autopsy, by the writer, 12 hours after death.—Surface of body generally pale; rigor mortis slight. Brain congested. The sinuses of the dura mater and the veins of the pia mater were tinged with fluid blood of a dark color. The substance of the brain was remarkably firm in consistence, but unchanged in color. The puncta vasculosa were unusually numerous and distinct. Some of the blood which escaped from the divided cerebral vessels happened to collect in the occipital fossæ, and in the basin formed by the skull-cap, that chanced after it was sawn off to be placed beneath the head. This blood, after standing for some time, coagulated feebly, and became changed to clots of a soft consistence. The ventricles of the brain contained about a small spoonful of pale serum, and there was but very little subarachnoidean effusion, even at the vertex. Much blood escaped while removing the brain. Lungs, liver, and kidneys congested, i. e., they contained more than the

normal quantity of blood, but in other respects these organs were sound. The spleen also was congested and enlarged. On incising it and making moderate pressure, blood escaped freely from the cut surface. Heart natural; but the blood contained in it and the great vessels connected therewith was either entirely fluid or coagulated to but small extent. Only two small white fibrinous coagula were found, one in the right auricle and the other in the right ventricle. Stomach distended with gas. Externally its color and general appearance were natural. On laying it open about an ounce of yellowish viscid fluid (bile) was found. The mucous membrane of the middle third of the organ, and that belonging to the folds generally, had a dull red color. The whole interior was thickly coated over with viscid mucus, which, in some parts, presented a glairy appearance. The gastric mucous membrane was neither thickened nor softened. Intestines natural. Bladder distended with pale watery urine, but its coats were healthy. No odor of alcohol was detected in the stomach or any other part.

Comments.—It sometimes happens, as in the case just related, that a person dies suddenly from drinking a large quantity of spirituous liquor, and such person is said to be *poisoned* by the alcohol contained in the liquor. The poisoning is termed acute, because of the brief space of time that elapses between the ingestion of the poison and the fatal termination. There are cases upon record in which death took place in less than half an hour. But the average period which elapses between the introduction of the poison into the stomach and the fatal termination, is stated to be from twelve to eighteen hours. In this case, the subject lived about twelve hours.

With regard to the quantity of ardent spirits required to produce death, so far as I know, the smallest quan-

tity which has produced that result in the human subject is three ounces of brandy, taken by a boy seven years old. This case is referred to by Mr. Alfred Taylor.

With regard to the morbid appearances revealed by dissection, the following are the principal important points: 1st, the congested condition of the brain, lungs, liver, spleen and kidneys; 2d, the catarrhal state of the mucous membrane of the stomach, denoted by its reddened hue, and the presence of a large quantity of mucus spread over its surface; 3d, the fluid condition of the blood, and the diminished coagulability thereof; 4th, the hardening of the substance of the brain, occasioned probably by the action of the alcohol thereon.

Percy's experiments have shown that alcohol is absorbed from the stomach, unchanged, and with great rapidity, into the blood; that mingled with the blood-currents it is carried into every part of the body; and that it has a very strong affinity for the brain—stronger, indeed, than for any other part of the body.

Case II.—*Suicide by inhaling Chloroform: Autopsy.*—A German woman, æt. 22, married, and residing at 22 Spruce Street, had for some time been in the habit of administering to herself chloroform for the relief of a distressing toothache. She adopted the practice, in the first instance, by the advice of a dentist, as I was informed, who also cautioned her with regard to the great danger attending its use. About 8 o'clock, p. m., July 24th, she was found lying on a sofa in her own room, dead, with a pocket handkerchief, still wet with chloroform, lying over her mouth and nostrils. It is said that she lived very unhappily with her husband, and that they had a violent quarrel a short time before she

was found dead; after which she appeared very much excited, threatening to destroy herself, and was not seen again alive.

Autopsy, eighteen hours after death.—Countenance, lips, and whole surface of body very pale (her complexion was florid during life); expression of countenance, that of quiet slumber; eyes closed, and pupils natural; body, that of a very beautifully formed young woman. Lungs much congested with venous blood, otherwise healthy. Heart sound, except that its muscular tissue was rather more flabby than usual. The blood in the cavities of the heart, great vessels, etc., was entirely fluid, (i. e., it exhibited no clots.) The right side of the heart and the large veins were full of blood. Liver and spleen strongly congested (venous.) The mucous membrane of the stomach, intestines, and kidneys, was much congested; it was extensively reddened, but exhibited none of the products of inflammation. The congestion appeared to be of a passive character everywhere. The brain and the mucous membrane of the organs of generation were not examined.

The principal morbid phenomena revealed by the autopsy were: 1st, the fluid condition of the blood, which is the more worthy of note because the subject was cut off suddenly in the vigor of robust health; and 2d, the general venous congestion, which was more strongly marked in the mucous than in any other tissue. The presumption is that the stagnation of the blood, above-mentioned, commenced in the lungs, and was primarily occasioned by paralysis of the par vagum, (i. e., arrest of the nerve-force transmitted by it,) aided perhaps by the imperfect decarbonization of the blood, consequent upon the presence of chloroform in a gaseous state, in the place of atmospheric air, in the pul-

monary cells. The pulmonic circulation being thus obstructed and dammed up, the pulmonary artery, the right side of the heart, and the whole nervous system, became surcharged with blood.

Case III.—*Suicide by taking Hydrocyanic Acid; Autopsy.*—A gentleman, æt. about 40, took his own life on the morning of October 17th. About 9 o'clock on that morning he was found lying on his back, on the outside of his bed, having on all his clothes except the coat, and quite dead. But a few minutes previously he had been seen alive. His friends had suspected his mind to be unsound for some time, though he attended to business daily up to his decease.

Autopsy, five hours after death.—Whole surface of body very pale; expression of countenance that of quiet slumber; eyes open, brilliant, and their pupils widely dilated; rigor mortis already present. On opening the cavity of the abdomen the odor of prussic acid was plainly perceived. On opening cavity of thorax the same odor was faintly perceived. The blood in the heart, *venæ cavæ*, and throughout the body generally, was fluid; and no trace of a coagulum was found. The lungs did not exhibit any morbid appearance except old pleuritic adhesions on both sides. The stomach was empty and contracted, and its mucous membrane thrown into folds. A strong odor of hydrocyanic acid was perceived on opening this organ. The mucous surface of its folds had everywhere a deep and bright red color. The mucous surface between the folds had a pale rosy hue throughout the organ. The mucous membrane was also somewhat softened in every part of the stomach. No other morbid appearance was noted. No change in the color of the blood was observed.

The quantity of the poison taken is believed to have been two ounces of medicinal hydrocyanic acid, U. S. Ph. A two-ounce vial labelled to that effect stood,

uncorked and empty, on a table at the head of his bed. It is also believed that death was not instantaneously produced. After drinking the poison he had placed the empty vial on the table, and then lying down upon the bed had straightened himself out upon his back and composed his person as if for sleep; for the body was found in that position after death. Now, all these preparations for a decent exodus from life would occupy at least a few instants of time. The appearance of the cadaver, and the unrumpled condition of the bed, denoted that no convulsive movements had occurred.

Case IV.—*Suffocation by Gases from Burning Coals (anthracite and charcoal combined); Autopsy.*—Jane M., servant, æt. 14, always healthy, was found on the morning of April 30, lying in bed, in her room, in a state of complete insensibility, and in fact in a dying condition. The respiratory movements had ceased, but the contraction of the heart could still be faintly perceived, and a feeble pulsation in the temporal artery. Efforts were made to restore her, but without success. Her room was filled with gas generated by a fire which she had made over night in a stove, not knowing that the flue was obstructed. The fuel was charcoal and anthracite.

Autopsy, twelve hours after death.—Rigor mortis well marked; embonpoint preserved; surface of body pale; lips red; mouth open, and colorless froth exuding from it. Each pleural cavity contains more than half a pint of bloody serum. The lungs did not collapse on opening thorax. The anterior margin of each exhibits several dark-colored spots (lobules) resembling the atelectasis of infants. They are depressed below and deeper in color than the surrounding surface, but their pulmonary vesicles are not completely collapsed, for they still contain some air and exhibit some crepita-

tion. The lungs do not contain more than the normal quantity of blood. The bronchial mucous membrane is uniformly red in color, but exhibits no other morbid appearance. Heart natural. The blood contained in the heart and great vessels was fluid, thin and cherry-colored. I nowhere found a clot. Stomach distended with gas, and contains some partially-digested food. Liver, spleen, kidneys, intestines, and uterus natural. Head not examined.

The lungs were found not gorged with blood at the autopsy because, in all probability, it had been transuded from them into the pleural cavities; and this opinion is strengthened by the remarkable fluidity and cherry color of the post-mortem blood.

Case V.—The following case, in so far at least as the lesions discovered on making a post mortem examination are concerned, presents considerable resemblance to the one last related, and on that account is introduced in this place. Jane Schuister, a well-made and healthy girl, æt. 16, after laboring all day much harder than usual, retired to rest on the evening of March 29, complaining of headache and some other trifling symptoms, of which but little notice was taken. About 5 o'clock on the following morning it was discovered that she was dead. She lay in bed as if asleep. She had not made any noise nor attracted attention to herself in any way during the night. She slept with her mother in a very small room where a fire of stone coal had been burning all day, and continued to burn in the evening after they went to bed. The draft of the chimney was bad, and caused the air of the room to become strongly impregnated with the fumes of burning coal.

Autopsy, about eight hours after death (estimated.)—Rigor mortis strong. Transparent, frothy liquid was oozing from the mouth. The air passages were full of colorless frothy liquid. The bronchial mucous membrane was reddened in patches. The right lung was intensely congested, being much increased in volume

and weight, and on cutting into any part of it, an abundant quantity of liquid, mostly tinged with blood and mixed with bubbles of air, was poured out. The pulmonary tissue seemed to be soaked with bloody serum throughout the organ. In the posterior part crepitation was nearly abolished, but not completely in any part (hypostatic congestion). Hepatization was nowhere present. There was considerable bloody serum in the right pleural cavity, which had probably been extravasated from the lung after death. There was a smaller quantity of bloody serum in the left pleural cavity. The left lung was in the same condition as the right, except it was not congested in so high a degree. The heart was healthy. The stomach contained about half a pint of partially digested food. The liver, spleen, kidneys, and intestines, were sound. The head was not examined. The blood was fluid. No heart-clots or other coagula were found.

If in this case death was occasioned by the fumes of the burning coal, why was not the mother's life also destroyed at the same time? It should, however, be stated that the mother, according to her own account, was nearly suffocated when she wakened at 5 o'clock a. m., and found her daughter dead. Furthermore, it is possible that the mother had a greater capacity of resisting the gaseous poison than the daughter. Be this as it may, to what other cause can the sudden death of this young woman, while in robust health, be ascribed, besides the poisonous air of the room where she slept?

Case VI.—*Acute Poisoning produced by the Foul Air of a Privy-vault; Death; Autopsy.*—On the 23d day of June the writer made a post-mortem examination of the body of a middle-aged German, a night scavenger, who had lost his life about ten hours previously by inhaling the foul gases generated in the vault of a privy

into which he had descended in the pursuit of his calling. He did not die in said vault, but was taken out by his comrades in an insensible condition, and expired in from twenty minutes to half an hour afterwards. There was no tendency whatever towards reaction. Another scavenger suffered so severely at the same place and time from the same cause, that he was taken to the New York Hospital in an insensible state, where he died in about two hours. It was said that a lighted candle went out on being lowered into the fatal vault. The autopsy was made at the Fourth Ward Station House, and developed the following morbid appearances:

A considerable quantity of frothy sero-sanguineous liquid was oozing from the mouth and nostrils of the cadaver. Both lungs were intensely congested; they did not collapse when the cavity of the thorax was opened; their weight was increased as well as their volume. On incising any part of the lungs a frothy sero-sanguineous liquid followed the knife, in considerable quantity. The pulmonary tissue crepitated under pressure throughout. The air passages were full of frothy sero-sanguineous liquid, resembling that issuing from the mouth. The mucous membrane lining the air passages was discolored with a reddish stain. The right side of the heart, the venæ cavæ, and the venous system generally, were full of dark-colored blood, which was fluid everywhere, and no coagula whatever were found. The liver, spleen, stomach, intestines, kidneys, etc., were natural, with the exception of a considerable amount of venous congestion, resulting, apparently, from the stagnation of the blood in the lungs.

This case, wherein death did not occur till the lapse of nearly half an hour after exposure, together with that of the other scavenger who was taken out of the same privy and carried insensible to the New York Hospital, where he died two hours afterwards, show

pretty conclusively that the foul air of privy vaults is more destructive to life than carbonic acid, for if said air had been impregnated with that deleterious agent, and no other, either one or both of them would probably have recovered on being withdrawn from it.

ART. III.—*On the Permanent Cure of Stricture of the Urethra by the Galvanic Cautery.* By ROBERT D. NESMITH, M.D., New York.

I desire to call the attention of the profession to a new operation for the permanent destruction of stricture of the urethra. The authors of this ingenious application of the analytic powers of electricity are Dr. F. Mallez and Dr. A. Tripier, of Paris; the former of whom has made his name familiar to all students of diseases of the genito-urinary organs, while the latter is scarcely less favorably known for his works upon Hygiene, and the application of electricity to medicine.

The information which I here present is derived, in great part, from a pamphlet recently published by Drs. Mallez and Tripier, and kindly sent me by Dr. Mallez.* I propose to give a brief summary of what had been done in this direction previous to the invention of MM. Mallez and Tripier, to describe their operations, and to quote some cases out of the many which they publish.

Although as far back as 1841 Crusell, of St. Petersburgh, had communicated to the Academies of Sciences

* De la Guérison durable les Rétrécissements de l'Urèthre par la Galvanocaustique Chimique. Mayer-Odin, Paris, 1867.

of St. Petersburgh and Paris several papers upon the *electrolytic* treatment of certain engorgements and tumors, it is evident that he had but a vague and ill-defined idea of the physical results of his operation, which was limited to the resolution by the negative pole of a battery, without the production of eschars, of certain engorgements, as of the urethra and eustachian tube.

The credit of having purely comprehended the powers and possibilities of the galvano-chemical cautery—an awkward term, but one which best describes the thing itself—appears to be due to Ciniselli, of Cremona, who has so shaped and systematised the process as to leave no room for doubt as to the nature and extent of the services which it can render.*

When a body of imperfect conducting power, the cohesion of whose particles is not so intimate as to prevent decomposition, is placed in the circuit of a battery, that body is decomposed; the acid goes to the free extremity of the positive electrode, the alkali to the free extremity of the negative electrode. When the electrodes are unattackable, and the interposed body is made of organic matter, the acid and alkalies thus set free act upon the tissues as potential cauteries, determining the production of eschars exactly limited to the points of contact of the electrodes. As this phenomenon of decomposition occurs equally with living and with inanimate organisms, we thus have the means of effect-

* Dell' Azione Chimica dell' Elettricita sopra i Tessuti Organici Viventi, e delle sue Applicazione alla Terapeutica. Cremona, 1852.

ing, without the intervention of heat, cauterizations entirely similar to those determined by the action of acids or of alkalies, and also of controlling their activity by limiting the quantity and tension of the current employed.

Such are the physical facts deduced from Ciniselli's experiments, and any description of the galvano-chemical cautery which failed to recognize the importance of his researches, would do a great injustice to a truly scientific observer. But the full appreciation of the surgical value of these researches must be credited to another name. Dr. Tripier relates, in a communication published in the *Archives Générales de Médecine*, January, 1866, that during his service as *externe* in the Children's Hospital of Paris, where certain scrofulous affections were treated by the application of caustics in every form, he was struck by the difference presented by the cicatrices. Some were soft and flat, or even depressed; others were hard, and often projecting above the free surface.

Investigation proved that the former class of cicatrices was produced by alkaline, the latter by acid, caustics. Finally, after a long series of experiments, instituted expressly to determine the influence exercised upon the cicatrix by the chemical origin of the lesion, Dr. Tripier concluded that chemical caustics gave rise to two species of cicatrices; that the alkaline caustics produce soft cicatrices, of little or no retractility; that the acid caustics produce hard and strongly retractile cicatrices; that the negative pole of the galvanic pile gives cicatrices similar to those produced by the alkaline caus-

tics; finally, that the actual cautery gives cicatrices similar to those produced by acids.

As to the idea of acting upon the urethra by galvanism, Crusell, and after him, Wertheimber, had already thought of that, and it might not improbably have led them to the destruction of strictures had their method been at all clearly defined. They simply undertook, however, to utilize the resolvent action of the negative electrode to disperse peri-urethral engorgements, to which they attributed an active part in the production of strictures. Moreover, the batteries employed in these attempts were too feeble to determine a loss of substance.

Thus it will be seen that the idea of destroying strictures of the urethra by electrolytic cauterization arises from the convergence of two entirely distinct lines of inquiry; that this method was subordinated, of course, to the invention of that means of cauterization; that its application to the operation which we are considering devolves from the comparative examination of cicatrices formed by acids and by alkalies; finally, that the conclusions to be legitimately drawn from the consideration of each element in the question are sufficiently definite to render the operation perfectly justifiable, and the results readily to be foreseen.

The character of the cicatrix determined the choice of alkalies in operating for the destruction of strictures; the power of limiting and controlling the action of the cauterizing agent induced the preference for the alkalies evolved by the negative electrode of a galvanic pile, over caustic potassa or Vienna paste.

We have next to describe the operation itself, and the instruments employed.

The preliminary explorations, and the verification of results obtained, were made with conical bougies with olive-shaped extremities. The indications of calibre are according to the gauge of Charrière, in which No. 1 represents a bougie of one third of a millimetre in diameter—a millimetre is about half a line—each successive number of the series answering to an increase of one third of a millimetre in the diameter of the bougie.

The battery employed in MM. Mallez & Tripier's first operations consisted of twelve small pairs, with the bi-sulphate of mercury. Subsequently, a pile of eighteen pairs of medium size, with the proto-sulphate of mercury, was employed. Daniell's battery of fifteen to eighteen pairs would answer equally well. The urethral electrode consists in a guide, whose extremity closes the terminal opening of an india-rubber catheter, destined to protect the parts which are not to be cauterized. Messrs. Mallez & Tripier first adopted a very slender guide of German silver, with an olive-shaped extremity; they next substituted for the olive a cylinder, from three quarters to 1¼ inches long, so as to be able to cauterize laterally over a larger surface; they have now replaced the unyielding guide by a more pliable one, made of twisted wires, still retaining, however, the cylindrical extremity. They claim that this flexibility of the guide gives a greater degree of security in operating upon the curved portion of the urethra. The surgeon placing himself on the right of his patient, the

positive electrode is fixed upon the internal surface of the left thigh: it consists of a broad carbon button, separated from the cutaneous surface by two or three discs of moistened fungus (*agaric*). This disposition is to avoid a needless cauterization at this point. Contact between the skin and the carbon button is maintained by a band of india-rubber.

Everything being thus disposed for the operation, the carbon button being fixed upon the thigh, and the urethral electrode, covered by its protecting catheter, being placed in apposition with the anterior face of the stricture, the circle is closed at the positive electrode. The patient soon begins to experience a burning sensation at the point undergoing cauterization, but this sensation, which, even at the start, is feeble, diminishes still more as the eschar is formed.

The guide is then to be gently pushed, so as to maintain its apposition with the stricture, cauterizing in this way both from before backwards, and laterally. By pushing the catheter over the guide, so as to only allow a small portion of the latter to project, the duration, and therefore the depth of the lateral cauterization may be limited at will, that from before backwards continuing without interruption. Finally, when the obstacle is destroyed, the catheter passes without difficulty over the terminal button of the guide.

None of Drs. Mallez' and Tripier's operations were performed at the residences of the patients. After the operation, and after the verification of the increased calibre of the urethra, the patients went away, on foot, to take a bath, or, in some cases, to resume their daily

avocations, even when this involved bodily labor. The operation completes the treatment. No subsequent catheterism is needed to maintain the calibre of the urethra.

The introduction of sounds from time to time, after the operation, is merely to satisfy the surgeon that the destruction of the stricture is permanent. It has also been noticed that, instead of diminishing, the calibre of the urethra increases for some time after the operation. This phenomenon has been ascribed to the resolution of peri-urethral engorgements, situated within the sphere of action of the negative electrode.

From a report of thirty successful cases I have selected the following, as best illustrating the merits of the method, and the practical difficulties with which it has to contend.

Case I.—D., æt. 62, custom-house officer. Has had one gonorrhœa, when 20 years old. Micturates with difficulty for the past ten years. After several years, during which the desire to micturate became more and more frequent and imperious, D. was attacked by an incontinence, which persisted for eighteen months, obliging him to wear a urinal.

May 2, 1864. Exploration with a conical bougie reveals the existence of an obstacle situated at the end of the spongy portion of the urethra. By a rectal examination the prostate is found to be hypertrophied without deformity.

Twenty minutes are fruitlessly employed in attempts to overcome this obstacle by a bougie No. 3 (1 millimetre in diameter). These attempts are followed by the effusion of four or five drops of blood. The case not being urgent, the patient is allowed a few days' repose, and a bath is prescribed.

May 6. After three quarters of an hour spent in vain efforts, No. 3 is made to penetrate the bladder. A bath.

May 9. After having introduced and withdrawn this same bougie, No. 3, the galvano-chemical cautery is applied for five minutes, with a pile of twelve small pairs, with bi-sulphate of mercury. More than three eighths of an inch of stricture are destroyed. Immediately after the operation, bougies Nos. 19 and 20—the latter measures just one quarter of an inch in diameter—can be introduced, without causing the least trace of blood. The patient at once urinates with a full stream. No fever. From this time out, the patient continues to micturate with ease, and his incontinence has entirely disappeared.

After a lapse of several months, the cure was found to be still permanent.

Case II.—P., 45 years old, butcher. Good constitution. Three gonorrhœas; treated by copaiba, cubebs, astringent injections, and leeches. Presents himself at the dispensary in December, 1863. A spongy stricture $3\frac{1}{8}$ inches from the meatus, with a fibrous band in front of it. Examined with the endoscope; the mucous membrane is of a violet red. Touched three times with a solution of nitrate of silver, of fifteen grains to the ounce; the mucous membrane assumes a better color, and micturition becomes less difficult.

Patient not seen again till August, 1864. At that date the stricture will only permit the passage of No. 6, and even that size is introduced with difficulty.

Aug. 29, 1864. Application of the galvanic cautery for five minutes, with the same battery as in case I. No blood. Bougie No. 19 is passed at once. A week later No. 20 passes easily. Patient seen again in June, 1867; same condition.

Case III.—F., 42 years of age, sergeant of police, two gonorrhœas; the first in 1845. Constantly increasing difficulty in micturition.

In 1851, a total retention. Two strictures and a fibrous band. Dilatation for three months, pushed as far as No. 17.

In November, 1864, F. presents himself with two strictures, situated at $2\frac{3}{4}$ and $3\frac{1}{8}$ inches, respectively, from the meatus, and which will only admit No. 7.

Early in December the galvanic cautery is applied for twelve minutes, with the same battery as in the preceding case. Immediately afterwards No. 20 passes readily. For the past two years and a half, F. has been examined at intervals of six months; at present he admits No. 22 without difficulty.

Case IV.—C., 31 years of age, cooper. Four gonorrhœas, the first in 1858. Is of a lithic diathesis. Two strictures; one at three quarters of an inch, the other $2\frac{3}{4}$ inches from the meatus. Bougie No. 9 will not pass.

Oct. 25, 1866. Application of the galvanic cautery for fifteen minutes. The two strictures are destroyed. No. 17 passes freely.

Nov. 8. Nos. 19 and 20 pass without difficulty.

Nov. 22. No. 22 passes freely.

Patient seen again January, 1867; same condition.

Case V.—J. A., 27 years old, Spanish Government clerk. Frequent gonorrhœas. Urinates with great difficulty. A filiform stricture at $4\frac{3}{8}$ inches from the meatus. Bougies 3, and subsequently 5, are passed with difficulty.

Nov. 15, 1866. Application of the galvanic cautery for twelve minutes. Slight hæmorrhage. No. 8 passes, but is retained. Improvement in micturition.

Nov. 20. Second cauterization for seven minutes. Again a slight hæmorrhage. Bougie No. 16 passes very readily, and is not at all retained.

Nov. 30. No. 19 is not retained.

Case VI.—M., 45 years of age, private in the Zou-

aves of the Imperial Guard. One gonorrhœa. Was treated by dilatation two years ago for a stricture, and left the hospital cured. At present M. can only micturate drop by drop, with his body doubled up. A multiple fibrous stricture, a trifle over three quarters of an inch in total length, and occupying the posterior part of the spongy portion of the urethra.

The successive and excentric orifices of these strictures are found with great difficulty, and it is only after repeated attempts, with a whalebone bougie, that No. 5 is introduced, and even that is tightly grasped by the stricture.

Nov. 15, 1866. Application of the galvanic cautery (eighteen pairs, medium size, with proto-sulphate of mercury,) for sixteen minutes. The anterior portion only of the stricture is destroyed.

Nov. 22. No change in the patient's condition. Second application of the galvanic cautery for nine minutes, with a Bunsen's pile of nine pairs, feebly charged. No note taken of the immediate results of the operation. The patient micturated better for some days.

Dec. 6. Vesical tenesmus and dysuria. Alkaline baths.

December 13.—Bougie No. 2 is very tightly held. Third application of the cautery for nineteen minutes, with the same pile as at first. The end of the stricture is not yet reached. For the succeeding few days the patient urinates much more freely.

December 18. Fourth application of the cautery, for nine minutes. The stricture is passed.

December 27. Fifth application, permitting the introduction of No. 14. M. urinates very freely, but leaves Paris on furlough. Dr. Mallez expresses the liveliest regret at no longer being able to follow up this extremely interesting case.

Case VII.—M., 39 years of age, sergeant in the Third Grenadiers. Commenced having gonorrhœas in

1847; has practiced rupture of the cord upon himself three or four times. Was urethrotomized a year ago with the running-blade urethrotrome. This operation left behind it a persistent pain in the fossa navicularis. For some time, however, M. urinated freely; then with constantly increasing difficulty. Twice he suffered from retentions, which were relieved by baths.

January 18, 1867. Bougie No. 7 is tightly grasped by the stricture. As the patient could not interrupt his military duties, it is decided to operate several times, cauterizing a little each time. Nine minutes of galvanic cautery, with the usual battery. No. 11 is held, but less tightly than No. 7 had previously been. A second cauterization for 2½ minutes; No 16 passes, but is slightly retained.

January 24. A third application for seven minutes. No. 20 passes easily, and is not at all retained.

February 1. Same condition.

Case VIII.—D., 36 years old, currier. One gonorrhœa, complicated with orchitis, fifteen years ago. Great difficulty in micturition. On examination we find a spongy stricture, which admits No. 11.

July 15, 1866. Urethrotomy with the olive-shaped urethrotome. Eight days after, passage of No. 19. At the end of August the patient again presents himself, complaining of the same symptoms as before the operation.

August 30. Is again urethotomised, and dilatation kept up for two months, and carried as far as No 22.

November 4. The patient complains of the same difficulty in urinating as before treatment. No. 12 is tightly held. Mechanical dilatation with Priestly's instrument. Slight hæmorrhage. The dilatation, which had been carried to No. 19, diminishes rapidly.

Feb. 22, 1867. No. 12 passes with difficulty. A circular stricture at 4⅜ inches from the meatus, which from spongy has become fibrous. Five minutes of

galvanic cautery. Bougie No. 18 is not retained; No. 20 passes easily, but is retained.

March 1. Same condition.

March 29. No. 13 a little retained. Galvanic cautery for seven minutes. No. 19 is not retained.

April 4. Bougie No. 20 is not retained.

May 3. Same condition.

May 17. D. already begins to urinate less freely. No. 19 passes readily, but is slightly retained. Galvanic cautery for six minutes. Bougie No. 20 passes without resistance, and is not retained.

July, 1867. The patient continues to urinate well.

Case IX.—D., 37 years old, hospital steward. One gonorrhœa, contracted in Brazil, and much neglected. Urinates with difficulty since 1851. Has had from the beginning several total retentions. Treated several times by dilatation. A urinary abscess in 1859. Operated upon by Heurtaloup in 1866. Treated by dilatation at the Military Hospital of Val de Grâce in 1861. Again dilated in 1864.

March 29, 1867. A strongly retractile fibrous stricture at $4\frac{3}{8}$ inches from the meatus. No. 10 passes with difficulty, and is firmly grasped. Application of galvanic cautery for twenty-two minutes. Bougie No. 12 alone is passed; it is not at all held.

April 13. No. 21 passes freely. No traces of the stricture remain.

Case X.—A., 60 years old, type-setter. One gonorrhœa, lasted six months. Micturates with difficulty for the past thirty years. Has dilated himself from time to time more or less regularly.

May 10, 1867. Presents himself with a retention which has lasted ten hours. It is only after many and prolonged trials that a conical catheter No. 4 is made to penetrate to the bladder, though tightly grasped.

May 17. Galvanic cautery for fifteen minutes. Bougie No. 20 passes easily, but is slightly retained by a

fibrous band, which was not touched by the electrode, and which a second application of four minutes suffices to destroy. No. 22 then passes readily.

Patient seen again May 24 and 31; the same satisfactory condition continued.

On considering the above cases, the reader will not fail to be struck with the rapidity with which satisfactory results are obtained by means of an operation which is not more painful than simple catheterism.

As, on the other hand, it has never been established for any of the old methods, that the cure is permanent, after dilatation of the urethra is once obtained, the superiority in *immediate result* should alone suffice to merit a preference for the operation of Drs. Mallez and Tripier.

But that is not the only advantage claimed. The stricture once destroyed, the calibre of the urethra is maintained ever afterwards, indeed, is for some time increased. It may be objected that these operations are all of too recent date to establish the fact of durability beyond all cavil. That is true, but some of them already date from more than three years ago, and the fact of not having had, out of more than thirty operations, the least symptom of a return of the affection, has a significance which will not escape the attention of any surgeon who has much experience in stricture of the urethra.

One patient succumbed to urethral fever, six days after the operation; but the same accident came very near happening to him once before, after urethrotomy, so that this deplorable result cannot fairly be attributed to the galvanic cautery.

Once also, and only once, a patient complained of acute pain. MM. Mallez and Tripier declare their inability to explain this exception to what has been to them a universal rule. Indeed, the positive pole, fixed upon the thigh, has generally been found to occasion the most inconvenience.

Hæmorrhage has also been noticed sometimes. It is exceptional, however, and seems to have occurred only when the preliminary explorations have been laborious or much prolonged. Nor has the loss of blood exceeded a few drops, except in one instance, when it may have amounted to a thimblefull.

The conclusion which MM. Mallez and Tripier draw from the results of their labors, and which they desire specially to impress, is this: That internal urethrotomy is an operation which should be entirely abandoned, now that more satisfactory and more permanent results can be obtained in less time, and with less danger.

Without venturing an opinion as to how far this expectation may be justified, I would submit that the facts represented are well worthy the attention of all surgeons. The serious character, as well as the deplorable frequency, of the affection for which this operation professes to afford permanent relief, and the often delusive and transitory benefits resulting from internal urethrotomy, entitle the galvanic cautery to the earnest consideration of all advocates of progressive surgery. If it does as much in other hands as it has in those of Drs. Mallez and Tripier, it seems to me that we may all lay our urethrotomes aside, and with them the uncertain

and sometimes hazardous operation for which they were devised.

ART. IV.—*The Search for Balls in old Gun-shot Wounds.* By M. GOLDSMITH, M.D., Rutland, Vt.

EVERY surgeon knows the great difficulty which occasionally attends upon the search for musket balls and like missiles, especially in old cases of gun-shot wound. The oftentimes devious path through which the pus travels to the surface, whether the road is the ball track or a new canal, renders the introduction of a probe to any great distance impracticable. The length of the canal is too great to be traversed by the finger, and the surgeon naturally and properly hesitates to set out on a voyage of discovery when he has to cut his way in hunting for the road. Of course, when the position of the ball is determined, its extraction is commonly easy enough.

A case presenting itself to me during the past winter fully illustrates the difficulties to be surmounted.

A color-bearer in one of the Vermont regiments received a gun-shot wound in the hip. The ball entered at a point midway between the antero-superior process of the ilium and the great trochanter. Nothing was discoverable of its direction except that the fistulous canal leading from that point passed backwards and towards the dorsum of the ilium. On the thigh, and on its posterior surface and just above its middle, there were two other fistulous openings. At some pe-

riod in the history of the case, the parts at the aperture of entrance had been attacked with hospital gangrene, for which bromine had been applied. The eschar following this had indurated the tissues round about, so that this opening was too small to admit the finger. A probe passed backward towards the ischium about a finger's length. No point of tenderness or of fluctuation could be felt anywhere in the hip, buttock, or thigh, nor did pressure reveal any fountain of suppuration.

The man stated that the most persevering efforts had been made, in the several hospitals to which he had from time to time been removed, for the discovery and removal of the ball. He was very much emaciated. He had bed-sores. The discharge was profuse, chiefly from the opening on the thigh. His cheeks had a hectic flush. Of course, an operation which contemplated a division of the glutei throughout their extent, an operation giving traumatic surfaces almost equal to those of a hip-joint amputation, was not to be thought of.

The methods used in this case were those devised by me, while I was in charge of the Jefferson U. S. A. General Hospital, for the search for and removal of balls in such and analogous cases.

In the first place, the aperture of entrance and the upper opening of the back of the thigh were dilated with sponge tents. When these apertures had been made large enough for the reception of my finger, the canals were explored as far as the finger would reach. Of course no ball was found, but the general direction

of the sinuses was accurately determined. Guided by the finger, the canula of a long curved trocar, (such as is used for tapping the bladder from the rectum), was passed along the sinus leading from the upper aperture, and as far as it could be made to go, keeping in the canal. The point of the canula being now pressed so as to project the superficial parts, the stilet was introduced, and the point of the instrument made to emerge through the skin. The stilet being withdrawn, a long-eyed probe, armed with a strong double ligature, was passed through the canula, and the latter withdrawn. With the aid of the ligature a stout piece of linen was drawn into the opening made by the trocar. A like procedure was gone through with at the lower opening. As soon as the pieces of linen in these openings lay loose enough, they were removed, and compressed sponge tents took their place. When the new openings were large enough to admit the finger, it was introduced, and the regions in reach explored. Meanwhile the old openings had begun to contract, and were not afterwards interfered with. It will be seen from this that we were approaching the ball by two converging lines, and that all of the region intervening between the new and old openings had been thoroughly searched by the finger, as well as a finger's length in advance of each. As the areas of suppuration diminished, the quantum of pus lessened.

From these second openings a second advance was made, the process being the same. On examining the second point of approach from the thigh, I found that the canal bifurcated. The trocar was carried

through the deeper canal, as in the former instances, and when the finger could be got in to explore, the ball was found on the margin of the ischio-rectal fossa, as I was informed by Dr. Fox, who was in the immediate charge of the patient. The removal required but a slight touch of the knife to facilitate extraction with the forceps.

The patient began his convalescence with the establishment of the first openings, and during the past summer has been able to work in the hayfield with as much effect as he ever did.

The methods employed in this case are exceedingly flexible; capable of adaptation to a great variety of conditions. With their use I have as yet found no instance in which the ball could not eventually be found, or in which they did not lead the way to finding it. Inasmuch as this method may be made to supersede, in a multitude of cases, more sanguinary measures, it seems to me to deserve the consideration of surgeons.

The difficulties sometimes met were overcome in various ways.

Occasionally so sudden a flexure was found in a canal that the rigid canula would not pass without laceration of some part of the wall. In some such cases a long sponge tent was introduced to open the way for the canula. Sometimes a small catheter introduced first served as a director over which the canula could be introduced.

Then, again, it was occasionally found necessary to form the sponge tent around a piece of catheter, so as to allow the pus to escape without hinderance.

Whenever the dilatation of the opening proved especially painful, the skin at the aperture was notched a little way with a knife.

Finally, it always seemed to me to be important that the pyogenic membrane of the fistulous canals should be lacerated as little as possible.

ART. V.—*The Measurement of Respiratory Action.* By ALFRED L. CARROLL, M.D., New York.

THE cavity of the chest may be enlarged during inspiration in two ways:

First, and chiefly, by the contraction of the diaphragm.

Second, and to a much less degree, by circumferential expansion.

In ordinary, unlabored respiration, the action of the diaphragm is almost alone concerned. Even in women it is probable that the movement of the chest is due, not to the action of the thoracic respiratory muscles, but to the fact that corsets and tight clothing around the waist, by fixing the inferior ribs and impeding abdominal expansion, prevent the diaphragm from depressing itself, and thus force it to elevate the thorax. Any one who will notice the difference in the character of the respiration of the same woman when encased in "evening dress" or in the freedom of a night-gown, may convince himself of this.

In forced respiration, however, after the action of the diaphragm has reached its limit, the mobility of the ribs

is called into play by the contraction of the intercostal, scaleni, serrati, and other auxiliary muscles. In other words, volition comes to the aid of instinctive action. The air thus drawn into the lungs is called by Mr. Jeffreys "complemental," as distinguished from "tidal" air, or that portion pertaining to tranquil respiration.

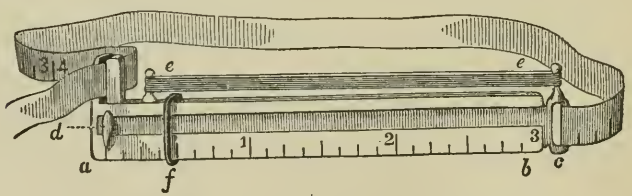
For the purposes of this article, I shall apply the term *tidal* to the air respired by instinctive diaphragmatic action, and *complemental* to the air inhaled by voluntary muscular effort. These definitions are not, of course, strictly accurate, since the diaphragm is to a certain extent under the control of the will, and the thoracic respiratory muscles are liable, under some circumstances, to involuntary motion; but within the bounds thus assigned, they will serve to convey my meaning.

Stethometry, or measurement of the chest, as ordinarily practised, serves only to ascertain the amount of complemental respiration as indicated by the costal expansion, leaving to the spirometer and to guesswork the task of estimating the tidal or diaphragmatic breathing. Even as regards the complemental air, want of system in recording the results of stethometry has prevented it from furnishing satisfactory data. We are told that in a given series of observations, so many inches "expansion" formed the average; but it is seldom stated at what portion of the chest the measurement was made. The usual method, however, is, I believe, to apply the tape over the nipples.

Now, the mobility of the ribs increases greatly as we descend, the false ribs having much greater move-

ment than the sternal, and, of the latter the inferior yielding more than the superior pairs. We accordingly find the greatest amount of expansion when the measuring tape is applied below the margin of the diaphragm. This expansion, however, is due merely to mechanical distension of the ribs from displacement of the abdominal viscera, by the descending diaphragm. Higher up, the amount of expansion diminishes, partly from the lessening circumference of the thorax, partly from the smaller extent of mobility of the ribs.

Several instruments have been devised for the purpose of ascertaining the extent of expansion of the chest. The best known of these is Sibson's stethometer. It is, however, apt to get out of order, and its expensiveness is also an objection to its general employment. The majority of physicians, in this country at least, adhere to the plan of passing the tape around the uninflated chest and allowing one end to slip through the fingers as the chest expands. This mode of procedure is obviously liable to inaccuracy. I give below the drawing of a stethometer which I had made by Tiemann & Co., of this city, which, as regards simplicity and exactness, will, I think, be found satisfactory.



It consists of an outer case, marked with a scale of three inches, *a b*, within which moves a slide, *c d*,

bearing a gnomon or indicator, *d*. To the end of this slide is attached an ordinary measuring tape, the first three inches being cut off, so as to render the scale continuous, which is passed around the chest and drawn through the catch at the opposite end of the instrument. As the lungs are inflated, the slide is drawn out and the indicator shows the exact amount of expansion. A hard rubber ring, *f*, sliding easily over the scale, may be used to render the stethometer self-registering; and Mr. Tiemann has added also an elastic band, *e e*, to draw the two portions of the instrument together. This elastic band, if used at all, must be very slight, as I have found that even the thin ordinary envelope rings prevent the full expansion of the chest. I therefore remove the band before applying the stethometer, which thus registers itself without the hard rubber slides.

Before proceeding to comment upon the results of stethometry, I wish to call attention to the great discrepancy of the opinions advanced as to the actual amount of air contained in the lungs, or exchanged during respiration. Magendie says that

According to Menzies, the medium quantity of air which enters into the lungs at each inspiration, is three hundred and twenty cubic inches. Goodwin thinks that, after a complete expiration, the lungs still contain about eight hundred and eighty cubic inches. Menzies asserts that the quantity is much greater, and that it amounts to fourteen hundred and sixty one cubic inches.

According to Davy, after one strong expiration, his lungs retain three hundred and thirty two cubic inches.

	Cubic inches.
After a natural expiration	970
After a natural inspiration	1106
After a strong inspiration	3206*
By strong expiration, after a deep inspiration, there passed out from the lungs	1556
After a natural inspiration	643
After a natural expiration	353

Mr. Thompson thinks that we shall not be far from the truth if we suppose the quantity contained in the lungs to be 2294 cubic inches,† and that there enters and passes out of the chest at each expiration and inspiration, 327 cubic inches.

Such absurd over-estimates as the above passed current until the spirometer controverted them by its exact registry of the expired air. With the aid of this ingenious contrivance, Dr. Hutchinson has shown that the amount of air that can be expelled by the deepest expiration after the fullest inspiration, bears a singular relation to the height of the individual.

For every inch of stature from five to six feet, eight additional cubic inches of air at 60° Fahr. may be thus given out. . . . The quantity of air which can be thus expelled for the stature of five feet one inch, is 174 cubic inches, and for six feet, 262. It is independent of the absolute capacity of the chest.‡

Carpenter, alluding to Hutchinson's experiments, says:

The size of the chest affords no good indication of the capacity of expiration. The results of such examinations are so nearly uniform that disease may be

* This capacity would require a pair of lungs eight inches in altitude, and measuring *ninety* inches in their greatest circumference, *sixty* inches in their smallest circumference, or at their apex!

† Answering to 42 inches circumference at apex, 72 inches at base, and 8 inches altitude.

‡ Draper's Physiology, p. 166.

suspected in any man who cannot blow out nearly so many cubic inches as the average of those of the same height; the only exceptions among healthy subjects, being in the case of fat men, whose capacity is always low.

Notwithstanding the positive data thus furnished by the spirometer, however, we find that it, like the stethometer, gives us the results of *forced* respiration, or, in other words, measures the *tidal* and *complemental* air combined—both thoracic and diaphragmatic breathing. Concerning the latter, or ordinary tranquil respiration, many and varying estimates have been made. Mr. Coathope, from observations made upon himself, fixed the average number of respirations in a minute at wenty, the average bulk of each inspiration at 16 cubic inches, and the total quantity that passes through the lungs in twenty-four hours, at 460,800 cubic inches, or 266⅔ cubic feet. Viardot, from experiments on himself in a state of rest, calculates the diurnal total at 530,026 cubic inches, (about 23½ for each inspiration, allowing 16 respirations to a minute,) and considers that this total would be increased by the ordinary amount of exercise to 624,087 cubic inches, (or 27⅔ for each inspiration.) Valentin places the diurnal total at 688,348 cubic inches, (30½ for each inspiration.)

Dr. J. C. Draper, by measuring the amount of water deposited from air breathed into a condenser kept at a temperature of 32°, obtained the following results:

1. On making sixteen respirations in the minute, and continuing the experiment for twenty minutes, the average of five different series of experiments gives 622

cubic inches of air expired each minute, (38⅞ at each expiration.)

2. On making six respirations in a minute, and continuing the trial for twenty minutes, the average of three series of experiments gives 511 cubic inches of air expired each minute, (85⅛ each expiration.)

3. On making thirty-three respirations in a minute, and continuing the exeriment for twenty minutes, the average amount of air is 1077 cubic inches expired each minute, (32 7-11 each respiration.)

Taking the first of these experiments as representing normal diaphragmatic breathing, we may accept its results as the average measure of the tidal air, although this is probably subject to variations proportioned to the height of the individual, just as in the case of forced respiration.

We have seen that in ordinary tranquil respiration, the diaphragm is concerned almost if not quite alone, and that the spirometer and stethometer are employed to deal with the complemental air, or that portion inhaled by excessive action of the diaphragm, aided by the contraction of the thoracic muscles. The comparative influence of these two actions may be computed in the following manner:

Roughly estimating the uninflated lung cavity as a truncated cone, having a diameter of 10·82 inches at its base, 4 inches at its apex, and an average altitude of 8 inches, its capacity is 369·3 cubic inches. Deducting from this 13 cubic inches for the space occupied by the healthy heart, there remains 356·3 cubic inches as the solid contents of the unexpanded lungs. Making

allowance for the space filled by the vessels, the bronchial tubes, etc., this estimate will be found to nearly coincide with Davy's calculation of the residual air, or that remaining after a strong expiration, (332 cubic inches.)*

Now, as the result of a number of experiments with the stethometer upon healthy subjects, I have found the average amount of thoracic expansion (which, from my observations, appears less than is generally supposed) to be as follows:

Measuring below the margin of the diaphragm....from	$3\frac{1}{2}$ to 4	inches.
Just above the margin of the diaphragm.....	3	"
Below scapulæ and lower margin of pectoralis major...	$2\frac{3}{4}$	"
Below scapulæ and over nipples.....	$2\frac{3}{4}$	"
Over scapulæ and over nipples.....	$2\frac{1}{2}$	"
Over scapulæ and sternal end of second ribs.....	$1\frac{5}{8}$	"

Throwing out the first of these measurements, which, as I have before stated, shows only the yielding of the

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* In connection with stethometry, the following extract from Dr. Hammond's "Treatise on Hygiene," is interesting:

"With reference to the external dimensions of the chest relatively to the height, Mr. Brent (quoted by Hutchinson) has furnished some very valuable indications. These may be formularized as follows:

"Relation of the external chest to the height, measured over the nipples.

"Minimum chest: $\frac{1}{2}$ of the stature—1-61 of the stature=circumference of the chest.

"Medium chest: $\frac{1}{2}$ of the stature—|—1-15 of the stature=circumference of the chest.

"Maximum chest: $\frac{2}{3}$ of the stature=circumference of the chest.

"To apply these rules to practice, take an instance of a man five feet one inch in height.

"Minimum chest: height 61 inches, $\frac{1}{2}$=30·5 inches—1-61=29.5 inches circumference of chest.

"Medium chest: height 61 inches, $\frac{1}{2}$=30·05 inches,—|—1-15 (4.07 inches)=34.57 inches circumference of chest.

"Maximum chest: height 61 inches, $\frac{2}{3}$=40·7 inches circumference of chest."

These measurements we suppose to be made when the act of inspiration is half completed.

false ribs to mechanical pressure, we have 2½ inches as the average greatest expansion of the lung cavity proper. This would give an additional capacity of 96 cubic inches. If this be deducted from the amount of air indicated by the spirometer, the remainder will show the extent of the action of the diaphragm. Thus, a man five feet six inches in height should expire 214 cubic inches by a strong expulsive effort after a full inspiration. Subtracting 96 from this amount, there remain 118 cubic inches to be attributed to the depression of the diaphragm—an estimate which, in the case of the thoracic dimensions I have supposed above, would be justified by an extreme central depression of about two inches.

Reviews and Bibliographical Notices.

ART. I.—*Illustrations of some of the Principal Diseases of the Eye, with a brief Account of their Symptoms, Pathology and Treatment.* By HENRY POWER, F.R. C.S., M.B., Lond., etc. London. J. Churchill & Sons, 1867. 8vo., pp. 631.

THE title of this book is aptly given, because it directs attention to the numerous colored representations of external and internal ocular disease which it contains. These are fine specimens of chromo-lithography, and good drawings from nature. The whole book is an elegant piece of typography, with clear type and broad margins, and reaches 631 pages octavo.

This seems bulky, but we find on perusal that much more needs to be written to present the whole subject of ophthalmology in fitting form. Our English lite-

rature does not yet possess a complete treatise on the subject as it exists at the present day.

Mr. Power's work is chiefly a collection of the views of other men. It is true he contributes his own experience, and every book must consist in greatest part of the results of other men's labors. But we expect an author to do more than simply quote the suggestions and views of others; we want to know his opinions of their value.

To give a few samples of the book, the chapter on strabismus gives a good resumé of the anatomy and physiology of the ocular muscles, and gives in a general way the pathology of strabismus as dependent on errors of refraction or upon paralysis. Then at page 43 begins the special description and treatment of convergent squint, concerning which the author leaves the impression that paralysis of the sixth nerve is its most common cause. This view is not expressly inculcated, but the great need of correcting the error of refraction does not have its due prominence. There is no allusion to the very common fact that astigmatism is to be found in many cases of strabismus, and binocular vision cannot be restored without correcting it. The author states that both eyes should not be operated on at the same sitting. For a deviation amounting to more than three lines, we think it always proper to do both operations at one sitting. The value of sutures is not mentioned in regulating the effect of the operation and closing the conjunctival wound; nor is Liebrech's method by free dissection and sutures mentioned. Indeed, the value of binocular vision and the methods for securing it are but imperfectly set forth; and this is what gives its chief importance to the subject.

Diseases of the lachrymal apparatus are well described, and for their treatment, the method of probing and injection of astringent solutions are recommended. But for the worst cases of obstruction of the duct and disease of the sac membrane or of the bones, this method is not effectual, and nothing remains but de-

struction of the lachrymal sac. To this the author does not resort, and says the operation is rarely undertaken in this country, (Great Britain.) We think Mr. Bader will be found to do it quite as often as cases appear which demand it, and in the *Ophthalmic Review* for April, 1866, page 54, it will be seen that Mr. Windsor and Mr. Lawrence frequently practice it. Ablation of the lachrymal gland, as revived by Mr. J. Z. Laurence, is not alluded to; it has not yet established itself in the confidence of ophthalmic surgeons.

The chapter on conjunctival disease is very judicious and satisfactory. The author inclines to the moderate methods of treatment, and his recommendations are sound. One exception may be taken to this remark, viz., on page 203 he speaks of controlling gonorrhœal ophthalmia by solution of nitrate of silver—gr.ij ad oz.j—in connection with frequent washing and liberal diet. It may be doubted if most surgeons would be satisfied to trust a bad case of this sort to the curative power of such a weak caustic solution.

The subject of trachoma is well handled; its pathology is succinctly stated, and the true principles and methods of treatment laid down. The distinction between inflammatory hypertrophy and trachomatous infiltration of the conjunctiva, is clearly presented. So, too, acute trachoma is well described.

Equal commendation belongs to the statements respecting corneal disease. The varieties are well distinguished, and the mode of treatment such as can be generally accepted. In treating iritis, the author employs a pretty decided antiphlogistic method, and lays great stress on the value in all cases of mercurial treatment associated with tonics. His emphatic assertions will probably be received among American practitioners *cum grano salis*.

When describing iridesis, the author fails to inform his readers of the instances in which cyclitis, and even atrophy of the globe have ensued, and made surgeons hesitate to adopt this proceeding, providing iridectomy

can be made to answer nearly as well for the optical effect.

On page 391 the author gives his first account of the use of the ophthalmoscope, and this we cannot consider satisfactory. Optical principles are almost ignored, and some errors have crept in; for instance, to recommend an objective lens of three or four inches focus, to be held "an inch or more in front of the eye of the patient," is a mistake either in the choice of the lens or in the distance at which it should be held. It is rather surprising that the author omits to state that the method of ophthalmoscopic examination which he describes, gives an inverted and real image of the fundus; and it is still more surprising that the reader does not get the slightest intimation that the fundus oculi can also be examined in a way which gives a virtual, upright and highly magnified image. Of course, no account is given of the value of the direct method in ascertaining the state of refraction.

Had the author been careful always to practise this mode of ophthalmoscopy in addition to the indirect mode, it is probable he would not have given the description he has of the case figured in plate ix, No. 57. He calls this central staphylomatous protrusion of the sclerotic. But he does not give any statement of the degree of myopia; while the absence of atrophy of the choroid at the optic entrance gives reason to suspect that the case was not one of sclerectasia, but simply of choroidal atrophy at the macula lutea. The employment of the direct method of examination would quickly decide the state of refraction and thus fix the diagnosis. The author in a foot note refers to other treatises "for a much more full and a very excellent account of the ophthalmoscopic appearances of the fundus," than his book affords, and we may thus feel bound not to criticise rigorously his performance, but it was well worth while to have left out some previous matter and given the student these very things.

Knowing that the author is a surgeon of Westmin-

ster Ophthalmic Hospital, we are not surprised at the frequent allusions to "Mr. Hancock's operation," which he denominates in page 420, "cylicotomy or division of the ciliary muscle." For acute glaucoma, this operation doubtless often gives relief, and it is for this the author recommends it; but why coin a new term to express in Greek the erroneous theory that cutting the ciliary muscle has, per se, anything special to do with the benefit derived from the paracentesis? The author seems balanced in mind as to the comparative value of iridectomy and "cylicotomy" in the treatment of glaucoma, but for acute glaucoma leans to "cylicotomy" as the easier to do.

Passing over the chapter on retinal disease, which contains little original observation, we open the subject of cataract. At the present day, when new modes of operating are being tested, one may perhaps be allowed to hold a suspended judgment as to which mode to choose. Our author appears to favor flap extraction for hard cataract. When speaking of linear extraction, he mentions the scoops which have been suggested, but does not mention how little inclination surgeons now show to employ them; they are left to be the last resort.

At page 541 is described a combination of discission with linear extraction, which is probably not accurately described. He says: "After the rupture of the capsule with the needle, the semi-solid cataractous substances may be pressed forward into the anterior chamber. A double-edged Wenzel's knife may then be thrust through the cornea at the lower part; the greater part of the lens escapes on separating the edges of the wound with the curette, and the remainder may be extracted with the same instrument." Pressing forward the lens matter into the anterior chamber, after rupturing the capsule with the needle, and without any other wound, is not a very safe manœuvre, and probably the author means no more than to make a free discission, and the coming forward of the lens matter is spontaneous, not the result of pressure.

In describing Graefe's modified linear extraction, a serious mistake occurs, one which is vital, or rather would be fatal if followed. Page 543. "The length of the incision thus obtained, he believes to be equal to four and a half or five millimetres; equal to one fifth of an inch." The author has mistaken the characters $4\frac{1}{2}'''$ to $5'''$ to mean millimetres instead of meaning Paris lines—these are the figures in the French translation of Graefe's paper by Ed. Meyer, page 42, which he quotes. In English measure this equals not one fifth of an inch, but four tenths to nine twentieths of an inch, a wound just large enough for the purpose and no more.

Not having done this operation more than three times, the author does not give an opinion upon it. He quotes Graefe's statistics, from M. Meyer's French translation of Prof. G.'s paper, and quotes also from Mr. Windsor's abstract in the Year Book of the Sydenham Society for 1866. The quotation from Mr. Windsor is introduced in a connection which would lead one to ascribe the success of 90 per cent. in 300 operations to belong to flap extractions, whereas it really is stated respecting modified linear extractions.

The last chapter is devoted to errors of refraction, and here we find numerous deficiencies. No department of ophthalmic science has been more fruitful of brilliant discoveries than this; and in no department can we attain a greater degree of certainty of diagnosis, nor offer more perfect methods of relief. Diseases of accommodation and refraction are dismissed with twenty-nine pages, of which asthenopia takes three and astigmatism four. The author in a foot note refers to authorities, but where so much had been said on more commonplace topics, surely these newer themes deserved fuller consideration. The section on presbyopia begins with the remark that "presbyopia, termed by Donders hypermetropia acquisita, etc." We greatly err in our apprehension of Donders' views if he will consent to be saddled with this definition. It is true he descibes presbyopia as finally,

in old age, amounting to hypermetropia, when the far point has gone beyond infinity, and the person needs convex glasses for distant as well as for near vision, but to call presbyopia in its early period "acquired hypermetropia," or to make the two terms synonymous, is an utter perversion of the distinctions in which all are now agreed. In truth this sentence is probably simply a blunder, and a reference to Donders' book, page 204, will show that it may have originated from careless reading of the caption of §16.

There is another blunder which indicates a careless use of English, and equally inexcusable, on page 524, where, speaking of the expulsion of the lens in performing extraction, as being sometimes difficult, he says: "it is probable that its reticence depends either on the opening being too small," etc. By what metaphor the opaque lens can be called *reticent*, implying that it could ever be anything but silent, we cannot conceive; perhaps the author meant to use the word retention.

On the whole this book is not without value, but we are yet to look for the treatise which will fill the gap in English ophthalmic literature. Perhaps it is too much to expect the whole subject to be comprised in one work. But let us have no more feeble and unsatisfying hand books. Ophthalmology is becoming something akin to a positive science, and we want treatises which handle well and completely the section which they attempt to discuss. Far better is it to write a good monograph on one topic, than a diluted essay which attempts many and exhausts none.

ART. II.—*The Intracranial Circulation: an Essay, to which was awarded the First Prize of the Boylston Medical Society in* 1867. By THOMAS DWIGHT, Jr., House Surgeon of the Mass. Gen. Hosp'l. pp. 28. University Press, Cambridge, 1867.

THIS admirable little monograph, without presenting

anything decidedly new, brings together with great clearness of analysis the conflicting views of physiologists and pathologists upon a subject of considerable interest and importance. The legitimate object of prizes for essays upon special subjects undoubtedly is to bring out original investigations; but in the absence of new experimental researches, nothing can be more useful than clear and dispassionate analyses of conflicting observations upon important subjects.

The peculiarities of the intracranial circulation certainly present great physiological interest, and some years ago attracted a great deal of attention. Many will remember the very animated discussion which took place between Dr. Kellie, who adopted the idea of the great anatomist, Monro, that the quantity of fluid in the intercranial vessels was necessarily invariable, and Dr. Burrows, who contended that the circulation here, as in other parts, was subject to important physiological and pathological variations.

The views of the most reliable authorities on this subject are pretty well settled, however, at the present day; and the experiments on the physiology of sleep by Durham and by Hammond, show conclusively that many of the varied physiological conditions of the encephalon depend upon variations in the activity of the cerebral circulation; but in many recent works this subject is handled as though it were still one of doubt.

The author of the essay before us has certainly discussed most ably all the experiments and observations bearing upon the intercranial circulation. We judge from the title-page that when this paper was written he had not graduated in medicine, yet the clear, scientific style and admirable spirit displayed throughout the paper would do credit to an experienced writer.

The conclusions arrived at with regard to the intercranial circulation are so carefully considered and fully carried out by the facts, that we quote them as a good *résumé* of what is actually known on the subject:

"1st. That the circulation within the cranium varies

according to the wants of the system or accidental circumstances.

"2nd. That though it is regulated by the same forces that govern the general circulation, their action is modified by many peculiar arrangements of surrounding media.

"3rd. That the cerebro-spinal fluid maintains the plenitude of the skull and spinal canal, the cranium being very nearly a closed case, and the brain almost incompressible.

"4th. That the blood returned from the brain differs in its composition from the rest of the venous blood."

ART. III.—*A Practical Treatise on the Diseases of Children.* By D. FRANCIS CONDIE, M.D. Sixth Edition, Revised and enlarged. Philadelphia, Henry C. Lea, 1868, 8vo, pp. 783.

SIX editions of a book are a practical endorsement of its merit, more valuable than the commendatory notices of the press, and one too that leaves to the reviewer only the duty of calling attention to the renewal of the work. The edition before us has undergone a careful and thorough revision, and by the addition of new materials, compiled from every available source of information, is brought quite up to the advanced state of knowledge regarding that class of diseases which claims so large a share of the practitioner's attention, and which demands so much skill in their proper management.

ART. IV.—*Germinal Matter, and the Contact Theory; An Essay on the Morbid Poisons, their Nature, Sources, Effects, Migrations, and the Means of Limiting their Noxious Agency.* By JAMES MORRIS, M.D., London, &c., second edition, London, John Churchill & Sons 1867, 12mo, pp. 111.

DR. MORRIS has done good service through the lit-

tle book, the title of which heads this notice. He endeavors, and we think successfully, to show, that diseases spread by actual contact of the healthy body with the organic matter thrown off by the body when diseased.

Three steps of proof lead to the conclusion which he seeks to establish.

"1st. Air floats light little masses long and far.

"2d. We are always throwing off light little masses of matter.

"3d. These enter the body by different channels, especially by the airways, whose natural defences are insufficient to prevent them from going to the air-cells—to the blood."

From these premises the conclusion is deduced, "that light little masses from the body of one individual are constantly received by other individuals, so as to reach their blood."

Now as the "light little masses" which are thus thrown off from the body very often contain living matter in a state of active growth, we have a ready and extremely plausible theory to account for the propagagation of diseases by contagion. To be sure there is nothing very new in Dr. Morris's hypothesis. He has taken Dr. Lionel Beale's views as the basis of his argument, and has presented, in a forcible and convincing manner, a subject which has long engaged the attention of hygienists. The fact that even such comparatively large bodies as pus-corpuscles float about hospital wards where there are wounded persons, is very certainly established by microscopical observation.

In conclusion, Dr. Morris applies his doctrines to many important questions, including the location of hospitals, the disposal of excreta, the draining of marshes, and to the use of suitable disinfectants. His book is exceedingly suggestive, and will repay careful perusal by all thoughtful persons, medical or others.

ART. V.—*Obstetric Clinic—A Practical Contribution to the Study of Obstetrics and the Diseases of Women and Children.* By GEORGE T. ELLIOT, Jr., A.M., M.D., Professor of Obstetrics and the Diseases of Women and Children in the Bellevue Hospital Medical College, &c., &c. New York: D. Appleton & Co., 1868. 8vo., pp. 458.

DR. ELLIOT'S book is precisely what it purports to be—a practical contribution to the Study of Obstetrics and Diseases of Women and Children; and the plan adopted in the writing thereof is well calculated for the furtherance of his purpose. Taking special cases which have occurred under his own observation, the author makes them serve the purpose of texts, as it were, on which to base his comments and teachings. He is thus freed from the restraint which would have attended the preparation of a *systematic* treatise on the topics of which he treats, and he is absolved from the obligations which the promise of a *complete* treatise would have implied.

Thus untrammelled and committed to no specific method of study, our author enters at once into the consideration of the relations of albuminuria to pregnancy, and groups together a large number of cases bearing upon this point; and from them he deduces conclusions at once practical, sensible, and incontestible, regarding the diagnosis, prognosis, prophylaxis, and treatment of this condition. The importance of a careful examination of the urine of pregnant women, is evident from the disastrous results that accompany this condition, and from the ease with which, under proper treatment, these consequences, in many cases, may be averted. At the same time prognosis should be guarded, for we see recoveries taking place even under alarming symptoms; and to hastily condemn a patient to die may of itself produce a discouragement and alarm that will interfere materially with her well doing. A number of cases are introduced showing the

value of prophylaxis, which is discussed under the heads of elimination by the skin, bowels, and kidneys, (a judicious distrust being shown in the use of diuretics, except the least stimulating;) the preference being given to elimination by the skin and bowels; diet; the induction of premature labor, (which is regarded with favor when the child is fully viable, although it is an elective operation to be decided on by no one sign, but on a careful summing up of the whole case;) blood letting, (which is wisely not recommended beyond its local use in cupping over the kidneys when the symptoms are very acute;) and the removal of all depressing and irritating influences. Another series of cases mainly illustrate the treatment, in which Dr. Elliott does not hesitates to express his decided preference for the use of chloroform; and in this we think he is fully sustained by the opinions of those best qualified to judge. Experience has shown that the dangers attending the use of this anæsthetic do not obtain to the same extent in obstetric practice as in surgical cases, (first pointed out, we believe, by Dr. Bennet,) and whatever therefore may be one's predilection in favor of ether, he is fully justified in using the more powerful, prompt, and reliable agent, chloroform. Venesection, which we have all been taught to regard as the only proper treatment, and which, out of respect for the traditional usages of the past, teachers still keep displayed in the front rank of remedial agencies, our author candidly confesses his loss of confidence in with each succeeding year, and his indisposition to resort to it as frequently as formerly. Local blood-letting is many times serviceable, but very likely, we suspect, this is due more to the combined effect of the counter-irritation and the relief of local congestions than to any influence it has on the systemic circulation. The hastening of delivery by artificial dilatation of the cervix, the use of forceps, and craniotomy, are well illustrated by suitable cases. Some cases of the induction of premature labor here introduced would seem, logi-

cally speaking, to be more appropriate to the treatment by prophylaxis. This closes the third chapter of Dr. Elliot's book. Further on we find an occasional case of eclampsia reported when discussing other points which he would make especially prominent, as viz., the use of the forceps.

Altogether there are reported forty-two cases of eclampsia, thirty-seven with albuminuria, four *without* albuminuria, and one in which the condition of the urine is not stated. Six other interesting cases of albuminuria without convulsions are added.

The value of this series of cases to the practitioner is immense, and can only be fully realized by a comparison with the statistics given in other authors. For instance, Dr. Collins,* out of a total of sixteen thousand six hundred and fifty-four confinements, occurring during a period of seven years, in the Dublin Lying-in Hospital, gives only thirty cases complicated with convulsions. Drs. Hardy and McClintock,† out of six thousand six hundred and thirty-four confinements, (also in the Dublin Hospital,) report thirteen cases of convulsions. A third series of cases from the same institution, by Drs. Sinclair and Johnston,‡ show sixty-three cases of convulsions in thirteen thousand seven hundred and forty-eight confinements. Other comparisons might be adduced, but these, from a single institution celebrated for the accuracy of its records and reports, are sufficient.

Chap. iv is taken up with the relation of epilepsy to the puerperal state. There is no evidence of any connection between the two, and while we are closely on the track of the causation of puerperal eclampsia, we are still quite in the dark as to the origin of at least many of the cases of epilepsy. Several cases of puerperal mania afford an opportunity for a brief description of this unpleasant complication of the puerperal

* A Practical Treatise on Midwifery, &c. London ed. 1835. P. 201 *et seq.*

† Practical Observations on Midwifery, and the Diseases incident to the Puerperal State. Dublin ed. 1848. P. 264 *et seq.*

‡ Practical Midwifery, &c. London ed. 1858. P. 386 *et seq.*

condition. Dr. E. does not suggest any definite view of its pathology, though his directions as to the importance of examining the excreta for the detection of albuminuria, cholesteræmia, etc., would seem to warrant his belief of its dependence upon some toxæmic influence.

Next in order comes the consideration of ante-partum hæmorrhage, its causes, the reasons for deciding for or against interference by prompt delivery, which is an elective operation, and the various methods of controlling the hæmorrhage. This portion is well brought out, and the cases are less numerous than in the previous chapters, but still amply sufficient for the purposes of illustration, and in this way we have more room for the expression of the opinions of the author. The distinction between the dilated and the dilatable cervix is nowhere more important than in cases of ante-partum hæmorrhage, and especial emphasis is laid upon this point. Corollary to this subject, Chap. vii gives the various methods of induction of labor, the douche, Barnes's dilators, sponge and other tents, manual dilatation, the introduction of the catheter between the membranes and the uterine walls, the separation of the membranes, the electric and galvanic currents, and the use of medicinal agents. Each of these is in turn discussed, its advantages and disadvantages pointed out, and careful instructions given as to the mode of application, the precautions in use, etc.

Our space will not admit of our following the author through his successive chapters, wherein he takes up the consideration of various subjects, viz.: the effect of tonic circular contraction of a band of uterine muscular fibres in delaying labor, post-partum hæmorrhage, obstetric operations in deformed pelvis, the choice, uses, and applications of forceps, embryotomy, version, inflammatory complications in the surgical treatment of diseases of women, (e. g., pelvic cellulitis, cystitis, peri-cystitis, &c.,) compression of the funis, retro-pharyngeal abscess, &c.

These subjects are considered in more or less detail,

according as their importance seems to warrant, and throughout the chapters are marked by a thorough and appreciative knowledge of the questions under discussion. Take, for instance, the use of the forceps: we find recorded in this book, seventy cases of the use of these instruments. These seventy cases, (not all, it is true, narrated for the purpose of showing the value or the use of the instrument, but all bearing upon these points,) comprise almost every complication that one would possibly meet with in practice. Now to analyze in each case the reasons for the preference given to this procedure, which more often than other obstetric operation is *elective*, would in itself require a volume. Our author, therefore, groups his cases in classes, and reduces his reasons almost to the conciseness of axioms. Indeed, our only regret, after a pretty thorough examination of Dr. E.'s book, is, that he has not given more of himself, and less of his cases; for his immense experience and his recognized skill entitle his opinions almost to a judicial aspect that would carry conviction in itself, unsupported by the evidence of the cases so lavishly brought forward. And in another edition of the book, which we expect will soon be called for, we shall hope to see this change made, and the value of the book thereby increased. We may be pardoned also for suggesting that the introduction of typical cases only will suffice for the purposes of illustration; and that some of those here presented might be dropped without any weakening of the positions to be deduced from them. But as the book now stands, it is invaluable for the practitioner of obstetrics, for he will hardly, if ever, find himself in a tight place, the counterpart of which he will not find in Dr. Elliot's book. To the student it is less valuable, for the author's treatment of the subject implies a considerable degree of knowledge on the part of those to whom it is addressed, as well as the ability to estimate the value of the different alternatives presented to his choice.

The closing chapter on Kyestein is mainly a reprint of an article published some nine years since in the New York Journal of Medicine, and the result then arrived at are sustained by subsequent experience. It is, in brief, that there are no recognizable peculiarities in the urine of pregnancy, as was once fully believed. Scarcely even can its appearances be called "corroborative."

A very complete double index, one of cases, the other of general topics, adds much to the value of the book for the purpose of reference.

Reports on Progress of Medicine and Surgery.

OPHTHALMOLOGY.

By Henry D. Noyes, M.D., Professor of Ophthalmology in Bellevue Hospital Medical College; Surgeon to New York Eye and Ear Infirmary.

MUSCULAR APPARATUS.

Art. 1.—*Contributions to the Treatment of Strabismus.* [Klinische Monatsblätter für Augenbeilkunde, vol. v, pp. 130.]

Dr. Schweigger relates three cases of strabismus convergens dependent on ametropia, in which he successfully undertook the restoration of binocular vision. In the first patient, nine years old, he began by using prisms, to excite and correct double images, then as latent hypermetropia became manifest, he directed convex glasses; these optical means were used diligently during several weeks. The deviation of the optical axes greatly abated, the control over each eye became better, and finally a tenotomy of one internal rectus was done. The prisms and glasses were still employed, and perfect restoration of binocular vision in its fullest sense was accomplished. This case, and also the second, give occasion to some interesting observations on the physiological identity of the two retinæ, and Dr. S. inclines to think that in strabismus, some other portion of one retina may assume vicariously

the function of the *macula lutea*, and thus procure binocular vision.

The second case had hypermetropia of 1-9 and 1-10; and the second operation left a strong divergence, which continued for 24 hours. This, in place of resulting unpleasantly, not only disappeared, but was succeeded by convergence, which lasted a year, the patient using +1-30 for near work. After that he came again to Dr. S., who ordered + 1-9 and + 1-10, which corrected the total hypermetropia, and then strabismus ceased. This degree of hypermetropia has a very important influence in determining the freedom with which tenotomy may be done.

The stereoscope was employed, and many interesting contrivances resorted to, indicating how much physiological optics enters into the treatment of strabismus.

ART. 2.—*Strabismus making its Appearance during the formation of Cataract.* [Ophthalmic Review, xi, p. 262. 1867.]

A MAN of 60 years had had cataract in the right eye twelve years, and some time after it began to squint inwards. A concomitant convergent strabismus became fully established. Dr. Rainey removed the cataract, and subsequently a capsular obstruction. The other eye had a degree of sight, and the patient now became troubled by an annoying diplopia. The tendon of the right internal rectus was next freely divided, and the diplopia and strabismus disappeared. Dr. R. thinks the strabismus may have been caused by the necessity for holding things near, as his sight became dull, and the consequent straining of the accommodation. The case is at any rate remarkable.

ART. 3.—*A Modification of the Operation of Strabismus.* By Dr. R. Liebreich. [Archiv. fur Ophthal., XII, ii, 298, 306.]

THE author, who is perfectly familiar with the cau-

tions which Graefe gives for this operation, having been for several years his principal assistant, has sought a method of obtaining a greater degree of displacement of the tendon, without the dangers of sinking of the caruncle, and of excessive enfeeblement of the muscle. He has studied anew the anatomy of the so-called capsule of Tenon, or oculo-orbital aponeurosis, especially of that part which embraces the tendons at their insertion. He makes the following points: that the capsule of Tenon, as it lies in contact with the globe, may be divided into an anterior and posterior half, which may be compared to the two halves of a hollow sphere, fitted at their edges. The posterior cup, as it may be called, is perforated by the muscles, and intimately adheres to them as they pass through. The anterior half is much thinner, and difficult to isolate as a membrane. It adheres in front to the conjunctiva and sclera, and is much strengthened in its attachment to the conjunctiva in a line corresponding to the place where the tendons adhere to the globe. It then adheres closely to the surface of the tendons; also passes into the tissue of the lids. The lateral processes which, according to former accounts, have been described as running to either side of the tendons, and forming supplementary connections between them and the eye-ball, Dr. L. declares have no existence. Between the insertion of each tendon and the point where it perforates the posterior half of the capsule, is to be found only areolar connective tissue, and no distinct tendinous processes.

Dr. L. proposes the following mode of operating; taking the rectus internus: to cut the conjunctiva with forceps and scissors at the lower border of the insertion of the tendon, to separate the conjunctiva and capsule from each other, to dissect up the membrane as far as the semi-lunar fold, also to lift the caruncle and make a complete separation from the deep-lying parts. Dr. L. does not say how large must be the external wound, but it certainly cannot be less than 4‴ to 6‴ long. The conjunctiva is now completely loos-

ened from the capsule of Tenon, and the tendon is open review. Detach the latter from the sclera in the usual way without shortening it, and if a considerable deviation is to be relieved, make incisions into the adjoining connective tissue above and below. Finally, the conjunctival wound is united by sutures.

Dr. L. admits that the immediate result of this operation is a very marked limitation in the mobility of the eye, but says that this gradually disappears, and that the final result does not differ from that secured by the usual tenotomy. Unquestionably the danger of this mode of operating is in the possible production of muscular insufficiency, if not of an opposite deviation, but this may perhaps by experience be avoided. In cases of great deviation, and of considerable hypermetropia, the operation deserves trial.

ART. 4.—*Suppuration of the Cornea after the Operation of Bringing Forward the Tendon of the Internal Rectus Muscle.* [Klinische Monatsblätter fur Augenbeilkunde. Vol. v, page 73–79. Dr. P. Steffan.]

A BOY, 15 years old, had total paralysis of the third nerve of the left side, from a blow received when he was two years old. There was complete ptosis and divergent strabismus. To cure the deformity, Dr. Steffan performed Graife's operation for advancement of the internal rectus. In this operation the eye is held inverted by a thread attached to the stump of the tendon of the divided external rectus. Everything did well for two days, and the thread was then removed. A little abrasion of epithelium took place at the edge of the cornea where it was touched by the thread. This ulcer went on until the cornea suppurated, and sight was totally lost by a large perforation. Besides the injury to the third nerve, there was reason to suspect that the blow had damaged the cerebral functions, as there was a slight amblyopia of the other eye. The untoward result of the operation Dr. S. attributes

to injured nutrition of the cornea caused by the paralysis, as the boy was in good health, and the operation was well done.

An interesting article on Nystagmus, by Dr. Kugel, is in the Archiv. fur Ophthalmologie, XIII, ii, 413–422. It classifies the cases and shows the various causes, (but omits to mention albinism,) and yet does not give us much help in treatment.

Art. 5.—*Symptoms of Paralysis of the Ocular Muscles.* By Prof. A. von Graefe. 1867. pp. 175.

This treatise is a reproduction of lectures given to the students of the University of Berlin in 1866. It is divided into two parts, the general and the special. Under the general are contained chapters on: 1st. The starting point in diagnosis. 2d. Disturbances of mobility and their phenomena. 3d. Diplopia. 4th. Fusion of double images, and the extent of the power to do so. 5th. Value of diplopia for diagnosis. 6th. Apparent departures from the laws governing double images. 7th. How to recognize the degree of paralysis, and on the behavior of antagonist muscles. 8. The theory of identity of the two retinas in its relations to diplopia.

In the special part are contained chapters on Physiology of the muscles, and this is followed by discussions of paralysis of the rectus externus, of the rectus internus, of the rectus superior, of the rectus inferior, of the obliquus superior, of the obliquus inferior, and then final observations.

Our limits do not permit any allusion to the contents of the chapters, and we merely call attention to the book.

LACHRYMAL APPARATUS.

ART. 6.—*Further Experience on removal of the Lachrymal Gland as a Radical Cure for Lachrymal Disease.* By J. Z. LAWRENCE. [Ophthalmic Review, xii, 361, 1867.]

THE author gives a table of twenty cases, fourteen of which came under his own hands. In all the latter cases there was epiphora, abscesses and stricture of the nasal duct, and in four cases fistula of the sac. The duration of the disease was from one to twenty-five years. Probing had been employed in all, and in all a cure resulted only after the above operation. By *cure* is meant that in all cases but one the epiphora stopped, and in the exceptional case remained very slight. In eight of the fourteen cases it is noted that there was still discharge from the punctum; in three the abscess was cured. By abscess the author probably means the chronic inflammation of the sac, the pus being furnished by its mucous membrane. The only accidents were in four cases: ptosis, which in three cases soon disappeared; in the fourth was accompanied by diplopia; in one there was smart conjunctivitis.

Partial removal the author found as effectual as total extirpation. The eye does not suffer for lack of moisture. The dacryo-cystitis, if it continues, is treated by injections of vin. opii. or argent. nitrat., gr.j–iv ad oz.j, twice daily.

In three cases acute abscess ensued after the gland had been removed; this the author regards as having hastened the cure of "the preceding chronic abscess." In two of these cases, which were under his own supervision, the nasal duct was made pervious after the operation. If the sac should continue to excrete pus freely after the gland had been removed and milder measures employed, the author *would obliterate it.* The mode of operating on the gland is described in detail. An incision in the skin, "below the upper and outer third of the orbital ridge," (length not stated,) go through fascia,

feel for gland with fore-finger, being careful not to push it into orbit; if not readily recognized "divide the external commissure of the lids by an horizontal incision outwards, to meet the outer end of the first incision," turn this flap inwards, pass a double hook along finger and pull gland out; when it is cut away, wait until all the bleeding stops, and then close wound with wire sutures.

(It may be fairly asked whether, if chronic dacryocystitis requires obliteration of the sac, it were not better to do this operation first and defer attacking the gland until the effects of the sac obliteration had been ascertained? In most cases this proceeding accomplishes all that extirpation of the gland is claimed to do.)

EYE-LIDS.

ART. 7.—*Sarcomata of all Four Lids.* [DR. SCHIRMER. Klinische Monatsblät., v, 124.]

THE tumors were respectively 4‴, 3‴, 2‴ and 1‴ in height, and had been growing during 2½ years in a man 70 years old. They were solid, movable, and a little lobulated. They were found on removal to lie beneath the orbicularis muscle, and were composed of small cells, and a small proportion of connective tissue.

ART. 8.—*Plastic Operation on the Lower Lid.* [DR. KNAPP. Archiv. fur Ophthal., XIII, i, 183.]

A CANCROID ulceration occupied the inner two thirds of the lower lid of a man 46 years old. To supply the defect after its removal, a flap was made by incisions; one splitting the outer commissure and going far back on the temple, and finally turning upwards, another incision of equal length, and parallel to the first, only that its outer end turned downwards. The flap loosened and slid inwards to meet by its inner end a corresponding vertical edge at the side of the nose. As represented in the diagram, the flap was 2½ inches

long. The interesting feature of the case is the amount of sliding performed and the good result attained.

CONJUNCTIVA.

ART. 9.—*Affections of the Conjunctiva in cases of Error of Refraction and Accommodation.* By DR. SCHIRMER. [Klin. Mon. Blätt. fur Aug. v, 114. 1867.]

DR. SCHIRMER calls attention to the importance of remembering that many cases of chronic palpebral conjunctivitis are in reality cases of error of refraction and accommodation, and the relief of the conjunctival disease is not to be found in astringents, etc., etc., but in the application of proper glasses. He cites some interesting cases, which might be paralleled in the experience of every ophthalmic surgeon. The point is one of eminently practical importance, and too often escapes notice. In no case ought one to make the diagnosis of simple palpebral conjunctivitis, without having carefully tested for hypermetropia, astigmatism, myopia, and inquired into the state of accommodation and of binocular vision.

ART. 10.—*The Action of Various Remedies on the Conjunctiva.* By DR. PROSOROFF. [Archiv. fur Ophth. XI, iii, 142–155.]

A MOST interesting series of experiments were made by Dr. P. on rabbits, to determine the exact effect and comparative influence of remedial substances on the conjunctiva. The modus operandi was to apply a certain substance, say nitrate of silver, to the rabbit's everted eyelid, and after certain intervals, to scratch off a little epithelium with a needle and examine it by the microscope. This investigation was made after the lapse of one quarter, one half, one, and two hours, and finally, three hours. At the first two examinations were seen swollen rounded opaque cells, with one, two, or seldom three nuclei, besides these, oval turbid cells

with one or two nuclei. In addition a quantity of normal epithelium and cells in process of proliferation, and still further, at a later time, cells assuming the characteristics of pus cells in various intermediate forms. After two hours the pus corpuscles were found mingled with all the cells above mentioned, and after three hours nothing appeared but pus. Precisely the same effects were produced by other substances, the only differences being in the rapidity and quantity with which the various cells were formed and the duration of their existence.

Substances which excited perfectly similar effects were nitrate of silver, corrosive sublimate, sulphates of copper and zinc, tannin, acetate of lead.

Certain other articles, such as alum, nitrate of potash, and carbonate of potash, excited nothing more than a great multiplication of cells and growth of nuclei. In three and a half hours nothing but normal epithelium could be found; pus at no time made its appearance.

Dr. Prosoroff divides remedies into two classes:

I. Such medicaments as excite the production of pus cells, viz.:

Corrosive sublimate	during	144	hours.
Nitrate of silver	"	50—52	"
Tannin	"	12—14	"
Acetate of lead (basic)	"	11—14	"
Sulphate of zinc	"	10—11	"
Sulphate of copper	"	9—11	"
Acetate of lead	"	8— 9	"

II. Such as cause the growth of free nuclei:

Nitrate of potash	during	3½—5	hours.
Alum	"	3½—5	"
Carbonate of potash	"	1 —2	"

All of the above being in solution of gr.v ad oz.j.

Dr. P. found that substances were more effective in solution than when solid. A solution of nitrate of silver, gr.v ad oz.j, was equal to the mitigated stick composed of one part caustic to five parts nitrate of potash, and also equal to pure solid sulphate of copper. A

solution of sulphate of copper, or any substance, is reckoned as twenty times stronger than the solid crystal.

What are called astringents were not found to differ from so-called irritants; in all cases cell growth was set up, and the diminution in calibre of vessels, therefore, assumed a secondary importance.

A solution of nitrate of silver gr. v. ad 1 oz., is equal to
" tannin 18 4-7 gr. ad 1 oz.
" corrosive sublimate 1 23-36 gr. ad 1 oz.
" sulph. of copper 23 7-11 gr. ad 1 oz.
" sulph. of zinc 26 gr. ad 1 oz.
" acet. lead (basic) 18 4-7 gr. ad 1 oz.
" acet. lead 28 8-9 gr. ad 1 oz.
" merc. precip. rubr. 37 1-7 gr. ad 1 oz.

Dr. P. finally concludes that to cure a catarrhal inflammation it is not important what particular substance is chosen, but to choose the proper intensity and strength of solution of any of the above substances, according to the severity of the inflammation; for all owe their virtues to their irritative action.

CORNEA.

ART. 11.—*Tumor at Limbus Cornea.* Drs. LAINATI, CARLO, and VISCONTI ACHILLI. [Annales d'Oculistique, Tome lvii, May and June, 1867, p. 262.]

THE tumor was congenital, and the little girl only forty days old; it was situated in the right eye, overlapping both cornea and sclera, two thirds of it being on the latter. It was circular, the diameter of its base being five millimetres, its height two millimetres. It had a semi-cartilaginous consistence, and was covered with fine hairs. It was removed with little difficulty, and a week afterward the infant left the hospital.

On microscopic examination, the tumor was found to consist of connective tissue, whose upper layers were more dense than the lower, among these fibres groups of adipose globules, and an external envelope of epidermoid cells; the bulbs of hair follicles and sebaceous

glands were quite abundant, and one hair bulb was found which had on one side a cluster of sebaceous glands and the other a simple utricular gland, both opening into it. All these tissues belong to the skin, and the tumor must be regarded as originating in a perversion of development, from about the third month of fœtal life, when the external skin covers the eye, and is afterwards transformed into conjunctiva.

IRIS.

ART. 12.—*Membrana Pupillaris Persisting after Birth.* [Monatsblätter fur Augenheilkunde, vol. v, pp. 62, 119, 219. Dr. COHN, DR. KEYSER, DR. KORN.]

SEVEN cases of this anomaly are recorded, and Dr. Cohn calls attention to the literature of the subject, and remarks that very few authentic cases have been put on record, while the condition cannot be very rare. In most instances all that is seen are a few fibres running across the pupil and taking origin not from the pupillary edge but from the anterior surface of the iris at the *circulus minor*. These threads interlace with each other; they sometimes are attached to a patch of membrane of some size. The threads usually have a deep brown color. Sometimes the capsule is a little clouded. In all cases vision was defective.

ART. 13.—*Coloboma Iridis et Choroideæ.* [Ophthalmic Hospital Reports, Vol. v, part 4. 1866, page 322. M. S. WATSON. Klinische Monatsblatt. fur Aug., Vol. v, page 85. Dr. SAEMISCH.]

THREE cases are reported: the cleft was downward, and in two cases reached, without interruption, to the optic nerve. In all these were traces of a persistent membrana pupillaris. Visual field was defective at the place opposite to the coloboma, and there was also imperfect direct vision.

ART 14.—*Remarks on the Diagnosis and Treatment of Iritis.* [By DR. R. SCHERMER. Klin. Monatsblät. fur Aug. v, 107.]

DR. S. calls attention to a symptom by which iritis can be recognized at a very early period, before synechiæ have formed, viz., the loss of polish of the surface. This is not identical with change of color, and can be recognized when the patient has but one eye. It is probably the result of loss of the epithelium. To this sign belongs considerable importance as giving an indication for the prompt use of atropia. Every one knows that if full dilation of the pupil can be attained, the inflammation will probably not be severe; it is, however, by many erroneously thought that that if the pupil fully expand there can be no iritis. To tear away synechiæ, Dr. S. calls attention to the alternate use of extract of Calabar bean and atropia, and Dr. Becker has done the same.

CRYSTALLINE LENS.

ART. 15.—*The perfect method of Extracting the Lens; dedicated to "Modified Linear Extraction."* By DR. ADOLPH WEBER, of Darmstadt. [Archiv. fur Ophthalmologie. B. XIII, Abth. i, s. 187–274.]

THIS paper is a searching monograph into the mechanical principles involved in getting the lens out of the eye, and how this may most easily be done. It is subdivided into the following heads. "The importance of the operation known as modified linear extraction; its disadvantages; their causes; the fundamental principle of every cataract operation should be to secure the spontaneous escape of the lens; causes of mishaps in flap extraction; an inquiry into the conditions which favor spontaneous opening of wounds of the cornea; a few words concerning tenometry; a new tenometer; experiments upon the gaping of corneal wounds; the linear section; the section by a lance knife; the semi-

circular section; resumé of experiments; advantages of a section at the edge of the cornea; the flat linear section; the lance for making this section; the author's proceeding; supplement."

We can only select a very few salient points. The escape of vitreous, before the lens appears, is one of the chief accidents of modified linear extraction. It then becomes imperative to use a traction instrument, and this often involves unpleasant results. Prolapse of vitreous does not happen so often in flap extraction, but there is very serious interference with the nutrition of the cornea, and the wound is very prone to gape. The author relates his experiments on gaping of corneal wounds, and few would be willing to repeat his careful and laborious methods. He contrived an instrument to measure the amount of pressure exerted on an eye, by a column of mercury. He found that the vitreous chamber and the anterior chamber do not constitute one cavity in a physical sense any more than they do anatomically, and that the "tension" of the sclera would always be in excess of that of the cornea. For moderate amounts of pressure this difference was as great as 9° upon the tonometer; for the greatest degrees of pressure the tension of the sclera and cornea became more nearly equal, but never quite alike.

A linear section at the base of the cornea, even when very small and under slight pressure, exhibits some retraction of the edges of the wound, and especially at its surface. The section may be 8 mm. long and the pressure 40 or 50 mm. of mercury, enough to make the lips of the wound open superficially to a width of 1 mm. before the deep edges cease to be in contact. If the section be extended to 10 mm. it ceases to be strictly linear and has the character of a flap, and will open under pressure of 30 to 40 mm. of mercury; when pressure reaches the maximum, viz., 180 mm. mercury, the inner edges open to 1·5 mm., and prolapse of iris or vitreous is very liable to occur. The facility with which a wound opens is not influenced

either by the thickness or curve of the cornea, or by the presence or absence of the lens.

A wound by a lance-knife 10 mm. long resists a pressure of a column of 125 mm. of mercury without opening. When the wound was enlarged to 11 mm. it opened at a pressure of only 40 mm. of mercury. In this kind of wound the cornea is cut quite obliquely, the breadth of the cut surface is from 1·5 to 2 mm., and the inner edge of the wound is situated from 2·5 to 3 mm. from the inner edge of the sclera, and a trifle more distant from the attachment of the iris. An iridectomy was always made at the time of extraction, and there still remained of the iris a zone 3 to 3·5 mm. in breadth.

With a semi-circular section, whether inside or outside the margin of the cornea, a displacement of the flap appeared without pressure; under a column of mercury 10 mm. high the flap rose so as to separate the edges, and when the mercury reached 20 mm. the separation was 2·5 to 3 mm. wide; at 50 to 60 mm. pressure the flap became creased, and vitreous gushed out. The hyaloid is able to withstand a pressure of 50 to 60 mm., but when it has ruptured, vitreous continues to flow until the mercury has fallen to zero. This is true of all kinds of wounds; even the smallest linear wound has no advantage when once the hyaline has burst. Separation of the lips of a wound occurs in two ways, first, as simple retraction of the edges, in consequence of the elasticity of the tissues; secondly, as pouting, or protrusion of the edges, the result of pressure. The linear section shows the least tendency to gape by pouting of its lips, and the section by the lance-knife has the least disposition to retraction of its edges. The semi-circular wound is the readiest to open, both by retraction and by pouting.

The retraction of the tissues does not completely open the wound, when made with the lance-knife, until it equals one fourth the circumference of the cornea, which gives a length from end to end in a straight line

of 8·46 mm. The diameter of the cornea is taken at 12 mm.

The indisposition of a linear section to open spontaneously, even under the greatest internal pressure, is because the wound coincides with a great circle of the globe, and the internal pressure acts in the direction of radii to the surface; so that the edges of the wound can be sundered only when the section departs from the path of a great circle. A wound by the lance-knife falls in with a lesser circle of the globe, or crosses these circles obliquely, hence it would be expected to gape from internal pressure very quickly; and the reason why it does not do so until the wound has become equal to almost one third the circumference of the cornea is believed by Dr. Weber to be, because the area of the inner surface of the flap, as we must call it, is so much less than the area of its outer surface, the tissue being cut obliquely.

The next inquiry relates to the situation at which it is best to make the section in order to facilitate the escape of the lens? The diameter of the cornea being 12 mm., the diameter of the lens 9 mm., and the breadth of the cut edge of the cornea being 1·75 mm., double the last, making 3·5 mm., take this from the diameter of the cornea, and we have 8·5 mm., which almost exactly corresponds with the diameter of the normal lens. Hence the cut being at the corneal margin, when the lens comes forwards, its equator is found in contact with the inner orifice of the wound, and in the situation most favorable to ready emergence; it has only to move straight upwards, (the wound being supposed to be above,) it needs no inclination forwards or backwards. The only hinderance after the capsule is opened is the iris, and when this is excised nothing stands in the way. The anterior chamber is quite deep enough to permit this incision; according to Helmholz, the plane of the pupil is 3·79 mm. posterior to the centre of the cornea, and the section may easily and safely be made in a circle parallel to the cornea, and 1 mm.posterior.

The next question is, what must be the length of a wound to allow the passage of a lens 9 mm. diameter, and thickness of 4 mm.? This problem is solved by mathematical formulæ, and the result is 10 mm. which must be the measurement on the *inner* face of the cornea.

The wound, furthermore, must coincide with a great circle, that is, be linear. The disadvantages belonging to the linear wound, made by Graefe's knife, the author ascribes to the perpendicularity of its edges; he proposes a wound with edges more oblique, but otherwise the same as Graefe's wound. To make such a cut he employs a lance-knife 10 mm. wide at 6·5 mm. from its point, and 10·23 mm. long, concavo-convex, the blade forming with the shaft an angle of 120°. The hollowing out of the back of the knife gives a cut whose extremities run back into the sclera 1 mm. from the cornea, and whose apex is to be exactly at the limbus. The inner edge of the wound has been found by measurement to be 3 mm. from the attachment of the iris, and the thickness of the cornea as divided to be 1·75 mm.

The author does not always make iridectomy, but the most interesting part of his experience relates to the delivery of the lens. He uses a broad fixation forceps to seize the conjunctiva close to the corneal edge, and diametrically opposite the middle of the wound—at the middle of the wound he places a "shovel," transversely oval, 7 to 10 mm. wide, its front edge thin, moderately convex, and not turned up. At the beginnning of the manœuvre for expulsion he gently yet firmly presses with each instrument, in a line towards the centre of the globe, the operator holding both instruments. The wound begins to open, and the lens, freeing itself from the capsule, pushes into the opening; as soon as its edge gets over the posterior lip of the corneal wound, the pressure with the forceps is changed from a perpendicular to a tangential direction; thus the sides of the lens are more directly thrust into the wound. The pressure must be steadily increased until the transverse diameter of the lens has passed the wound, when it slips

into the "shovel." The pressure is not yet to be fully let up, especially that made by the "shovel." The wound must be kept open until the pupil is perfectly cleared of cortical matter. When this is accomplished, and not before, the instruments are withdrawn from the eye.

Other details are given, but the value of this paper consists in the exact appreciation of mechanical and anatomical principles on which it is based. The author's preference for a lance knife may not be generally accepted, but the incision which he proposes has very strong support in reason and experience. It is the same incision which Prof. Graefe now makes, with greater obliquity in the cut edges. The instruments and method for delivery are novel, and suppose an exact adaptation of the wound and of the lens to each other. A manœuvre similar in its *vis expellens* is now employed by Graefe, who uses a hard rubber spoon which he draws gently over the cornea from below, where the fixation forceps takes hold, upwards toward the wound, its pressure being at first perpendicular, and as the lens moves, being made at a tangent to the surface.

In respect to the operation for cataract, the following references may be made. There is not space enough for their analysis.

Klinische Monatsblätter fur Augenheilkunde, vol. v, pages 272, 279, 283, 284, 296.

Archiv. fur Ophthalmologie, Band XIII, Abt. i, Seite 85.

One Hundred Cases of Modified Linear Extraction, Dr. Knapp.

Ophthalmic Review, part 11, pages 239, 251, 352.

Ophthalmic Review, part 12, pages 372, 379, 398.

Erfahrungen und Studien uber die Staaroperation in Zeitraum der Jahre 1861–1867. Dr. Ph. Steffan, 1867.

Deutsche Klinik. Form of Cataract Knife. Kuchler, 872.

CHOROIDEA.

ART. 16.—*Tuberculosis of Choroid.* [Archiv. fur Path. Anat. und Physiologie, Bd. xxxix, Mai, S. 49–69. DR. J. COHNHEIM.]

THE writer made careful autopsies of seven cases of tuberculosis, and in six found miliary tubercles

in the choroid. They ranged in size from less than 1 mm. to 2·5 mm. in diameter. They had precisely the same features as ordinary miliary tubercles. Dr. C. does not sustain the view that they come from the fibrous coat of the capillaries, but believes they originate from certain pale small granular nucleated cells which resemble pus cells, and are found in variable numbers in the choroid. In the larger nodules the adjacent pigment is increased to a dark ring, in the midst of which the tubercle shines with a yellowish color. Prof. Graefe and Dr. Leber have in one case recognized tubercles in the choroid a few days prior to the patient's death.

ART. 17.—*Metastatic Suppurative Choroiditis.* [Archiv. fur Oph., Bd. xiii, Abth. 1, S. 127–185. Prof. H. KNAPP.]

A DETAILED account is given of three eyes from two patients who died of puerperal fever. The suppurative process began in the choroid and ended in panophthalmitis. A careful examination was made of all the tissues under the microscope, revealing pus in them all, and other products which are too much detailed to be described. The author's view of the steps of the morbid process, is as follows: Embolus and occlusion of the choroidal capillaries, then hyperæmia, hæmorrhage and suppuration. The overlying plane of vessels becomes similarly involved; the retina becomes lifted off by effusion, suppuration attacks its connective tissue, also the vitreous, ciliary body, and iris; hypopyum appears; the lens may partake of the suppuration, and finally the sclera, orbital tissue, and lids. If the patient survive, certain regressive changes occur. The globe gets smaller and soft, the cornea may or may not be clear, the iris and capsule are adherent, the lens recovers a degree of clearness, and so may the vitreous; one may see a yellowish reflex at the fundus with the naked eye, and this is the degenerate retina separated from the choroid.

The same lesions occur, and with considerable frequency, in cerebro-spinal meningitis.

ART. 18.—*Glaucoma.* [Ophthalmic Review, Part xi, pages 257–267, by RAINY and WINDSOR. Also in Klin. Monats Blät. fur Aug. v, S. 224. DR. KORN.]

Glaucoma in Eyes which have had the Lens removed. [Klin. Monats. fur Aug. v, 147. DR. HEYMANN.]

THE case recorded is unique in many points. The subject was a girl with congenital cataracts; these removed when she was 16; at 21 she had a fall, and following this acute glaucoma in right eye, which in four weeks caused total blindness; this having lasted ten days, iridectomy was done; the iridectomy was complicated by escape of vitreous; the wound healed with a bulging scar, a staphyloma; vision but imperfectly recovered; visual field perfect. This state remained the same for three years, then she was one day exposed to intense light from snow, which greatly dazzled her. Immediately there followed periodical attacks of blindness, deeper in the right than in the left eye, lasting ten minutes, when sight would return. This happened six or eight times in one day. By atropia and moderate antiplogistics, temporary improvement ensued, but within a year the eye became blind. This state went on for twelve weeks, the right eye extremely hard, media clear, optic nerve deeply excavated. Dr. Heymann finally excised the staphyloma, including a portion of the iris, which was atrophied and covered by false membrane. At this time sight was wholly extinguished, and eye was very painful. Twelve hours after the operation, when the bandage was removed, sight was restored so as to see the hand and large objects, though the field was narrow. The field of vision at length reached its normal limits on the outer side, but inwards did not go beyond the vertical meridian. For nine months sight remained the same, and then attacks of obscuration again came

on, and the visual field began to diminish. The case is still under observation.

ART. 19.—*De l'Ophthalmie Glaucomateuse, son Origine et ses divers Modes de Traitement.* [Par le DR. LEON BELLOC. Paris, 1867.]

THIS is a resumé of our knowledge and the theories on this subject. It is valuable, but contains nothing original.

RETINA.

ART. 20.—*Traumatic Amblyopia of Retina.* [Klin. Monatsblät. fur Aug. v, 126. DR. SCHROETER.]

A BOY aged 15 was struck in the right eye by a bit of steel. Besides a small ulcer on the cornea he was found to have central congenital cataract from 1½ to 2 mm. in diameter. Had lately had an attack of typhus fever. Two weeks after the accident the keratitis had almost disappeared, the pupil very active, but vision extremely bad. Atropine was used and central vision found to be 1-200, the visual field at eighteen inches distance to be no more than four or five inches across. By modifying the light with pale blue glass central vision became 1-10, and the visual field expanded to ten or twelve inches. By ophthalmoscope nothing abnormal to be seen, except great fullness of the veins. Treatment consisted in bandage, darkened room, nourishing diet, lactate of zinc, gr.ij, daily. In three weeks sight amounted to one fourth, which was all that could be anticipated because of the cataract; the visual field normal. This case is regarded as one of simple concussion of the retina.

ART. 21.—*Amaurosis Saturnina—Recovery after Subcutaneous Injection of Morphia.* [Klin. Mon. fur Aug. v, 224. DR. HAASE.]

PATIENT had well marked lead colic, from which he

recovered perfectly. After six years another attack came on, with violent abdominal pains. On the ninth day, as the colic pains diminished, a sudden loss of sight ensued, which in twenty-four hours became total blindness. He was then examined and found to have perception of light, pupils rather large and sluggish, retinal veins dilated, no paralysis of muscles, has a disagreeable sweetish taste in the mouth, a blue line along the gums. Patient had been taking opium, and this was continued. After six days sight was enough better to enable the patient to go out of doors alone. Visual fields normal; nothing abnormal in urine; nothing to be seen by the ophthalmoscope. Sulph. Morphiæ, gr. 1-6 was injected under the skin of the temple daily, with rapid improvement, and after a week v. = $\frac{2}{3}$. This amount of sight patient retained, and there remained an inability to distinguish colors as exactly as before. So he had to give up his business as painter.

ART. 22.—*Hemiopia, following Meningitis.* [Klinische Monatsblätter fur Augenheilkunde. v, 88. DR. ALEXANDER.]

PATIENT, a female, aged 29, healthy in appearance, examined Nov. 23, 1866. Three years before, says she had inflammation of the brain, which was actively treated, and disappeared entirely in course of a few months. She says that immediately afterwards, sometimes outlines of objects appeared indistinct, and at other times she could see only part of a large object at once. This trouble increased, and became more defined, so that now she sees nothing that is situated to her left. Accommodations and refraction normal, or nearly so. Pupils somewhat sluggish, equal in size. Opthalmoscopic appearances normal, except that retinal vessels are a little smaller than usual. Examination of visual field shows complete paralysis of the outer half of the retina in the right eye and the inner half of the retina in the left eye. There is, therefore, complete paralysis

of the right optic nerve, caused by some pathological change—probably the result of meningitis—situated in the course of the nerve at some point between its exit from the cerebrum and its junction with the nerve of the opposite side.

ART. 23.—*Hemiopia, from Tubercle in Chiasm of Optic Nerve.* (Autopsy.) [Klin. Monatsblät. fur Augenheilkunde, v, 166. DR. J. HJORT.]

PATIENT, male, 44, examined Jan. 12, 1867. Complained that three months before, sight suddenly became confused, and, after a few days, was unable to see clearly anything situated to his left, though direct vision was good. At same time he had pain in head and partial deafness in right ear. Left ear had been deaf for some years. Never had syphilis. Had often been exposed to sudden changes of temperature. Upon examination of visual field of right eye, the outer half of retina found completely paralysed, and inner half affected so that objects appear indistinctly. Vision 1-50. Left eye, inner half of retina completely paralysed, this being marked by a sharp, perpendicular boundary line; vision 1-5. Patient complained of violent exacerbating pains in neck and head, especially in right temporal region and behind right ear. Pupils sluggish, particularly the right, which was the larger of the two. In right eye, partial paralysis of oculomotorius. Ophthalmoscopic appearances: right papilla white, margin sharp; left papilla congested, margin indistinct; no symptoms of mental disturbance. For three weeks general condition of patient good, with gradual increase of local symptoms above-named. On February 2d delirium came on, which disappeared in a day or two; no increase in the paralysis. On the 10th symptoms became worse. On the 15th the right pupil was much larger than the left; symptoms of right facial paralysis; unconscious most of the time; involuntary evacuations; extremities not paralysed; pulse had risen

from 88 to 100. For a week pulse increased, and there was diarrhœa; other symptoms same as before. On the 22d patient became worse; pupils strongly contracted; pulse 144; respiration 48. Apparently no paralysis of the extremities. Death occurred at 8 p. m. Treatment had been local blood-letting; counter-irritation on neck and behind the ears; hypodermic injection of morphine; and, internally, iodide of potassium, and later, bromide of potassium. The autopsy showed miliary tubercle in the pia mater, as usual in the middle portions around the chiasm, posteriorly toward the pons, in the fossa sylvii, sulcus anterior, etc., with serous exudation; also, a few tubercles on the convexity of both hemispheres, and serous effusion in the ventricles. In the right half of the optic nerve chiasm was a mass of tubercle the size of a hazel nut, with irregular surface as if composed of smaller confluent tubercles, greenish-yellow in color, softened in the centre, and surrounded by a thin layer of semi-transparent atrophied medullary substance. Right optic nerve smaller than left, partially transparent. Right tractus opticus flat and thin, but of normal, opaque color. Tuber cinerium pressed to the left. In the cerebellum was a tubercle the size of a pea, softened in the centre, situated in the vermis superior, just over the arch of the fourth ventricle; and another, the size of a hemp seed, lying firmly upon the upper surface of the right hemisphere, towards the anterior border. There was also a small ecchondrosis prolifera clivi, which had perforated the *dura mater* and adhered to the arachnoid. In the lungs was a quantity of miliary tubercle, mostly recent. There was adhesive pericarditis with miliary tubercles, and tubercle in the liver, kidneys, and capsule of the spleen.

Art. 24.—*Hemeralopia.* [There are twenty-four cases reported in the Gazeta Medica de Lisbona. No. 11. v. xiii, June 1867. p. 287.]

ART. 25.—*Traumatic Coloboma of Iris and Rupture of Retina.* [Reported in Klin. Monatsblätter fur Augenheilkinde. v, 160. DR. DOHMEN.]

ART. 26.—*Retinitis, Morbus Brightie.* [Klin. Monatsblätter fur Augenheilkunde. v, 221. DR. ALEXANDER.]

PATIENT, male, 36, examined February, 1867. Contracted syphilis six years before, and had secondary symptoms, of which he says he was perfectly cured. One year ago noticed indistinctness of vision in right eye, which rapidly increased, so that at the time of examination v. = 1-20. Same difficulty commenced in left eye three months ago, v. = 1-5. Right visual field smaller than normal; left normal. Patient pale and anæmic; slight œdema of under lids and hands. Heart enlarged; endocardiac murmur present. No syphilitic symptoms except a few pigment spots on the body, a hard cicatrix on the corona glandis, and a few enlarged inguinal glands. Urine, quite abundant, sp. gr. 1010, with very large quantity of albumen, under microscope shows granular casts. Iris and lens normal, and action of pupil good in both eyes. The ophthalmoscope showed in right eye a change in the posterior part of vitreous humor resembling a curtain covered with minute dots, through which the retina could be seen with difficulty. The whole retina, as far as could be seen, was hazy, and there were small hæmorrhages, which near the macula lutea had run together, forming larger patches. Veins tortuous and enlarged. Near the nerve was a large white crescentic patch under the retinal vessels. The left eye gave nearly the same picture, though not so marked, but vessels were normal; posterior part of vitreous contained many floating opaque bodies.

The retinal changes formed a well-marked picture of albuminuric retinitis, but the change in the vitreous was exactly that described by Jacobson as occurring only in syphilitic retinitis; and the interesting question

in the case was, whether the disease was a mixture of these two forms of retinal trouble.

ART. 27.—*Retinitis Pigmentosa with Retinal Hyperæsthesia.* [Klin. Mon. fur Augenheilkunde. v, 229. DR. G. HAASE.]

PATIENT, male, 51, healthy, had noticed failing of sight since his 21st year, (said he had always been near-sighted,) and for four years past had not been able to bear the daylight, so that he had to be led around. After sunset could see much better. When examined could count fingers with either eye at 1½ feet distant. Visual field greatly diminished in size, especially upwards and outwards in both eyes; in right, also, upwards and inwards, and in left downwards and outwards, Pupils sluggish; normal in size. Optic nerves atrophied and oval in form; arteries thin. Periphery of retina showed the characteristic pigment deposit. Patient was found to see better in a darkened room, or through very dark-blue glasses. After confinement to a dark room for some days, and after having worn the glasses for some weeks, patient was able by daylight to count fingers at six feet with right eye, and four feet with left, and in a room partially darkened, at fourteen feet with right and eighteen feet with left. This improvement was probably of short duration, being merely the result of removing strong light, which was so irritating to the retina. Case interesting, because generally patients with retinitis pigmentosa can see well only by strong light, and as a rule complain of not being able to see after sunset.

OPTIC NERVE AND BRAIN.

ART. 28.—*On Defects of Sight in Diseases of the Nervous System.* [A very interesting article. London Oph. Hosp. Reports. Vol. v, December. p. 251–306. By DR. HUGHLINGS JACKSON.]

ART. 29.—*On a Group of Cases of Optic Neuritis in Children.* [London Oph. Hosp. Rep. Vol. v, p. 307. By JONATHAN HUTCHINGSON.] And in the same number of Hosp. Reports, a *Report on Cases of Congenital Amaurosis*, by DR. HUTCHINGSON.

ART. 30.—*Nerve Paralysis.* [Cases selected from Mr. Dixon's out-patients. Lon. Oph. Hosp. Reports, Vol v, p. 353.]

1st Case. "Complete paralysis of the left fifth nerve as regards sensation; motor function unimpaired; lachrymal gland active; impaired taste and smell; superficial ulceration of the cornea; suspicious symptoms as regards syphilis." Reported by Mr. W. Square, Clinical Assistant.

2d Case. "Partial paralysis of left fifth nerve, both of its motor and sensory functions; history of epileptic fits and of pain in the parts supplied by the nerve now paralyzed; impaired taste and smell; ulceration of the cornea; doubtful diagnosis of syphilis." M. Square.

3d Case. "Blindness with white atrophy in one eye, with paralysis of third and fourth nerves on same side; occasional hemiopia and failure of sight in the other eye." Reported by Mr. Warren Fay, Clinical Assistant.

L'Evénement Médical, November 9, 1867, contains an article by J. SICHEL, entitled "Nouvelles recherches pratiques sur l'Amblyopie et l'Amaurose causeés par l'abus du Tabac â fumer, avec des remarques sur l'Amblyopie et l'Amaurose des Buveurs."

ART. 31.—*Optic Neuritis.* [London Oph. Hosp. Rep. Vol. vi, 50. Seven cases.]

1st Case. "Optic neuritis in connection with constitutional syphilis." Patient, male, 34, had twice had chancre and a rash, twelve years before and three years

before. About the time of the last chancre, had pains in shin bones, head, and shaft of humerus. For last six months had nearly lost his memory, and for some time previous to examination had suffered severe pain in left eye-ball, some pain in right, and pain in forehead. When admitted to hospital had severe pain in forehead and could not sleep at night. Ophthalmoscope showed nerve discs pink in color, veins large and imbedded in margin of disc; arteries small; discs surrounded by recent extravasations; right disc ill-defined and much congested; vision not tested accurately; patient was occasionally seen reading; iodide of potassium mixture ordered. At end of six weeks left hospital; no pain; memory perfect; did not notice that sight failed him; both discs white and fluffy-looking; retinal vessels appeared normal.

2d Case. "Optic Neuritis in connection with constitutional syphilis—hemiplegia." Patient, male, 39, intemperate, had primary syphilis ten years before, followed by secondary symptoms; was salivated. One year before had a fit which left him hemiplegic, left side; has since had more than fifty fits, which begin in the left hand, and which at first affected left side of body only, but later both sides. Has suffered from frontal headache. Three months ago sight in left eye became misty, and six weeks afterwards the right eye was affected in same way. At examination, vision very imperfect; reads only large print at eight inches. Ophthalmoscope shows left disc white in color and woolly in appearance: vessels diminished in size and hidden in white material, occupying whole of disc. Left eye about the same, vessels smaller. Treated for two months with iodide and bromide of potassium, when he left hospital free from headache, and with scarcely any paralysis.

3d Case. Very much like the preceding one. These three cases were reported by Mr. Frederick Mackenzie from hospital practice of Dr. H. Jackson.

4th Case. "Optic neuritis in connection with ter-

tary syphilis." Patient, male, 41, unhealthy. Sight had been failing for six months. Had syphilis twelve months before, followed by secondary and tertiary trouble. Reads No. 16, Jaeger. Optic discs ill-defined; veins large and interrupted at various places; no extravasation.

5th Case. "Optic neuritis in connection with mercurial poisoning." Patient, male, strong and stout, engaged in the manufacture of calomel. Four months before had been taken ill with pains in the limbs, headache, staggering, and liability to fall, and sometimes inability to stand. Sight commenced to fail five weeks ago, and in a fortnight he became quite blind. Pupils dilated and motionless; media clear; optic discs ill-defined, prominent; vessels pushed forward by effusion, and in some places interrupted. One week after admission to hospital was delirious at night; severe headache. In the course of a month had improved, except in vision. Exudation had cleared off in a somewhat diagonal direction, from within outwards, leaving a perfectly white surface; veins large, artery small; margins of discs still jagged. Reported by Mr. W. Square.

6th Case. "Symmetrical optic neuritis in connection with lead poisoning." Patient, female, 19. Two years ago had commenced working in a lead mill. Four months ago was admitted to hospital with lead colic and paralysis of extensor of wrist. She recovered and went back to work. Fourteen weeks ago was attacked by severe pain in back of head; vomiting frequently greenish matter; indistinctness of vision. At the end of five weeks, became rather suddenly blind. Pupils large and fixed; general aspect of confirmed blindness; complains of numbness in tips of fingers; discs show usual condition of neuritis, and near them are numerous small apoplexies. Reported by Mr. Warren Tay.

7th Case. "Symmetrical optic neuritis in a child without the usual history of severe illness." Patient, boy of 7, healthy and intelligent. Six months ago the

mother noticed that he could not see objects handed to him, and that he sometimes ran against things. This grew worse. During the whole time had not been laid up in bed; no sickness or headache; appetite good; pupils normal size and acted well. He could spell out No. 20 Jaeger better with right eye than left. Optic discs of a dirty gray color; margins obscured; some morbid changes at macula lutea; vessels diminished in size, especially the arteries. Reported by Mr. Warren Tay.

DISEASES IN ORBIT.

Epithelial Cancer of the Orbit. [Oph. Hospital Reports, vol. V, part iv, December, 1866, pages 336–345.]

Cases of Orbital Sarcoma for Completing the Extirpation of which the Caustic Zinc-paste was used without injury to the Eyeball. [Ibid. Vol. V, part iv, 1866, page 345. J. W. Hulke.]

Aneurism in Orbit—Operation—Recovery. [Ophthalmic Review, xii, page 355. J. Z. Lawrence.

Enucleo-dissection of Eyeball. [Annales d'Oculistique, lviii, 56. J. Sichel.]

MISCELLANEOUS AFFECTIONS.

Art. 32.—*Gummy Tumors of Eye.* [Archiv. fur Ophthal. XIII, i, 65–75. Dr. Hippel.]

A patient, 45 years old, had eye trouble seventeen months after the primary sore; this got almost well, and so remained for six months, when inflammation again took place, and in both eyes. The left eye had simple iritis; the right was invaded by a tumor which occupied the inner and anterior portion of the globe, and affected the sclera, iris, ciliary body, choroid, and retina. The globe was enucleated, and the tumor showed all the microscopic as well as gross appearances of a gummy neoplasm. It was rather soft and pale, and rich in small, round, nucleated cells, like lymph corpuscles; some were undergoing fatty degeneration. There was very little connective tissue, and a large quantity of blood vessels. The normal elements of the tissues had completely disappeared. While the portion of the tumor which sprang from the iris, cho-

roid, and retina was soft and brain-like, that in the sclera was firm and fibrous.

ART. 33.—*Herpes Frontalis.* [Ophthalmic Hospital Reports, vol. VI, part i, September, 1867, 1–11. MR. BOWMAN.]

NINE cases of herpes are recorded which broke out on the forehead, and usually along the distribution of the supra-orbital nerve. The eruption was attended by severe pain of a neuralgic type, and frequently the eyes became inflamed. In some cases the pain was very persistent; in one female, aged five, for six years. The eye troubles were usually keratitis, conjunctivitis, sometimes iritis, in one case there was atrophy of the optic nerve.

To relieve pain, Mr. Bowman in two cases divided the supra-orbital nerve; once without benefit, and in the other case with good results.

Two more cases of Herpes zoster frontalis are given in Oph. Hosp. Reports: vol. v, part iv, p. 331–2, 1866; one by Mr. Hutchinson, in which no eye trouble occurred; the other by Mr. Paget.

ART. 34.—*Cysticercus in Eye.* [Oph. Hosp. Reports, vol. V, iv, 1866, page 318–320. By MR. TEALE.]

A WOMAN, aged 45, applied to Mr. Teale with strabismus and very defective sight of right eye. She had squinted since infancy, and sight had always been the same. Mr. T. found a cysticercus in the right vitreous, just behind the lens in the axis of the eye. Could read eight of Jaeger, and eye in other respects healthy. Patient was occasionally examined during two years and no change whatever took place. On the advice of Mr. Bowman, Mr. Teale decided not to meddle with the eye.

Mr. T. has also had another case of this parasitic disease, and this time the animal was on the iris. The patient was a girl ten years old, and for six weeks the

mother had noticed the speck on the iris. There was acute kerato-iritis when Mr. T. saw the eye, and he performed iridectomy, removing the animal intact, relieving the inflammation, and restoring the sight. He gives two sketches, one of the iris, with the cysticercus in situ, the other the head of the animal under the microscope.

A similar case is given by Dr. Kruger in the Klin. Monatsblätter fur Augenheilkunde, vol. v, 59, 1867. Extraction with iridectomy was successfully performed.

The following pamphlets have appeared:

Ueber Krankenhauser besonders Augen Kliniken, von Dr. J. H. Knapp, Professor in Heidelberg. Heidelberg, 1866.

[Concerning Hospitals, and especially Eye Clinics.] 8vo. pp. 112.

Lehrbuch der Ophthalmoscopie von Dr. Ludwig Mauthner. 1 Abtheilung, Wein, 1867.

[Text Book of Ophthalmoscopy; by Ludwig Mauthner, first part, with 42 wood cuts. Vienna, 1867.] 8vo, pp. 306. (To be completed within this year.)

Die Lehre vom Binocularen Sehen, von Edward Henry. Erste lieferung. Leipsic, 1868.

[The Theory of Binocular Vision; by Edward Henry, Professor of Physiology and Medical Physics in the Joseph Academy, Vienna.] 8vo, pp. 156, first part. (The second and third parts, which will complete the work, will appear during 1868.)

Untersuchungen der Augen von 10,060 Schulkindern, nebst Vorschlägen zur Verbesserungen der den Augen Nachtheiligen Schuleinrichtchtungen; von Dr. Herrmann Cohn.

[Examination of the Eyes of 10,060 School Children, with Suggestions for Correcting such Arrangements in Schoolrooms as are injurious to sight; by Dr. Herrmann Cohn, Oculist in Breslau.] 8vo, pp. 170. Leipsic, 1867.

"Ophthalmoscopische Beobachtungen," von Dr. Med. Albrecht Mooren, Düsseldorf.

[Ophthalmoscopic Observations by Dr. Albrecht Mooren.] 8vo, pp. 347. Berlin, 1867.

Varia.

Suicides in Vienna.—[In the Journal of last February, page 397, we published an account of the suicides in Vienna for the year 1865. A comparison of that statement with the following will show a remarkable uniformity, both as to numbers and the means chosen by the two sexes for self-destruction.]

"The number of deaths which came under the cognizance of the Vienna Sanitary Police during 1866, amounted to 749, and these consisted of 95 deaths from

suicide, 125 from accidents, and 529 sudden deaths and deaths from unknown causes. There were 95 undoubted suicides, being 14 less than in 1865, and of these 36 took place by hanging, 25 by poison, 13 by precipitation from heights, 9 by firearms, 6 by sharp instruments, 5 by drowning, and 1 by inhalation of illuminating gas. As to the ages at which the suicides occurred, the most frequent were between 20 and 30 and 40 and 50 (each 23 cases), next between 30 and 40 (19), and between 50 and 60 (18). Between 60 and 70 there were 6; from 14 to 20, 5; and above 70, 1. There were 69 males and 26 females, May being the month in which the greatest number (18) took place, and September that of the fewest (3). As already remarked in former reports, while in the females the number who committed suicide by poison (9) exceeded those who did so by hanging (5), among the males the number who hanged themselves (31) was double that of those who poisoned themselves (16). As to the mode of poisoning, this was accomplished in 10 (8 males, 2 females) by cyanide of potassium, in 6 (2 males, 4 females) by sulphuric acid, in 3 (1 male, 2 females) by phosphorus, in 2 (1 male, 1 female) by soap-lees (*Laugenessenz*), in 1 by corrosive sublimate, in 1 by prussic acid, in 1 by strychnine, and in 1 by opium, all these being males. All the deaths caused by firearms occurred in men, as did those from sharp instruments, with one exception."

Mongrel Association.—Misery, it is said, makes strange bedfellows. This has been strikingly illustrated lately in Philadelphia, where a meeting was held, it is stated, of "Allopathics, Homœopathics, and Eclectics," who, having amicably agreed to discard sectional names and adopt that simply of physicians and surgeons, formed themselves into an association, which, with characteristic modesty, they have styled "The National Medical Association of the United States of America."

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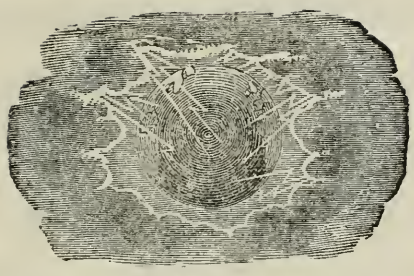

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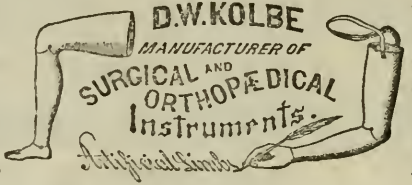

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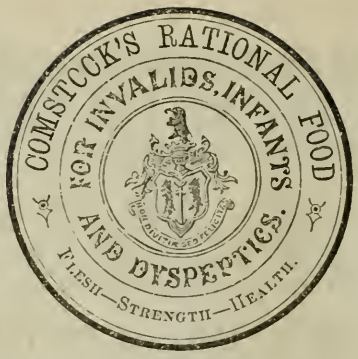

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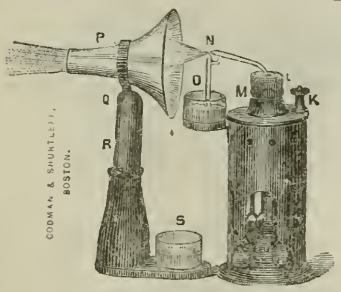

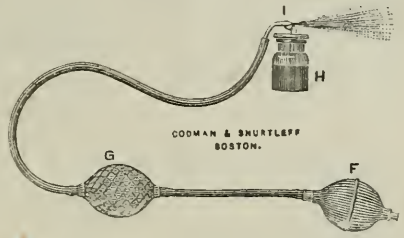

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